

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property

Organization

International Bureau

(43) International Publication Date

25 June 2020 (25.06.2020)



(10) International Publication Number

WO 2020/127319 A1

(51) International Patent Classification:

A01N 43/42 (2006.01) A01P 1/00 (2006.01)
A01N 43/86 (2006.01) A01P 3/00 (2006.01)
C07D 215/227 (2006.01) A01P 7/02 (2006.01)
C07D 265/18 (2006.01) A01P 7/04 (2006.01)
C07D 401/04 (2006.01) A01P 21/00 (2006.01)

Declarations under Rule 4.17:

- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))
- of inventorship (Rule 4.17(iv))

Published:

- with international search report (Art. 21(3))

(21) International Application Number:

PCT/EP2019/085721

(22) International Filing Date:

17 December 2019 (17.12.2019)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

1820729.0 19 December 2018 (19.12.2018) GB

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(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ,
CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO,
DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN,
HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP,
KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME,
MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ,
OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA,
SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN,
TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ,
UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ,
TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK,
EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV,
MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM,
TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
KM, ML, MR, NE, SN, TD, TG).

(54) Title: PLANT GROWTH REGULATOR COMPOSITIONS

(57) Abstract: The present invention relates to the combination of sulfonamide derivatives which are ABA agonists and at least one additional active ingredient selected from the group consisting of fungicides/bactericides, insecticides/acaricides and additional plant growth regulators. The combination is typically in the form of a composition simultaneously comprising these components which is used to control the growth of plants, improve plant tolerance to abiotic stress (including environmental and chemical stresses), inhibit seed germination and/or soften a plant against phytotoxic effects of chemicals, and control plant pests, in particular insects and/or fungi.



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PLANT GROWTH REGULATOR COMPOSITIONS

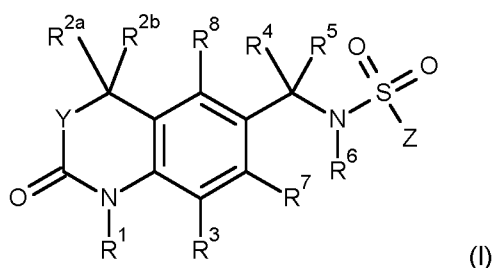
The present invention relates to compositions comprising sulfonamide derivatives which are capable of acting as plant growth regulators, to processes for preparing the compositions, and to methods of using the compositions for controlling the growth of plants, improving plant tolerance to abiotic stress (including environmental and chemical stresses), inhibiting seed germination and/or controlling insect and fungi.

Absciscic acid (ABA) is a plant hormone that plays a major role in plant growth, development and response to abiotic stress. ABA causes many of its cellular responses by binding to a soluble family of receptors called PYR/PYL proteins, which contain a ligand-binding pocket for ABA and other agonists. Direct application of ABA to plants has been shown to improve their water use efficiency. However, ABA is difficult and expensive to prepare and is unstable to environmental conditions and therefore unsuitable for large scale agricultural applications.

Quinabactin is a known ABA agonist which binds to the PYR/PRL receptor proteins and causes an abscisic acid response *in vivo*. Quinabactin has been shown to induce stomatal closure, suppress water loss and promote drought tolerance.

Whilst compositions comprising ABA agonists as the sole active ingredient are useful in agricultural applications to improve plant growth and development, and plant tolerance to environmental stresses, it has been surprisingly found that the judicious addition of certain other agriculturally active ingredients to the compositions increases the biological effects of the agonists and/or such other ingredients.

According to the present invention there is provided the combination of components (A) and (B) as active ingredients, wherein component (A) is a compound of formula (I)



wherein:

R¹ is selected from the group consisting of C₁-C₇ alkyl, C₁-C₇ haloalkyl, C₃-C₅ cycloalkyl-C₁-C₇ alkyl, C₃-C₇ alkenyl, C₃-C₇ alkynyl, aryl-C₁-C₇ alkyl, (3-6 membered heterocyclyl)-C₁-C₇ alkyl, phenyl, C₃-C₅ cycloalkyl and a 4-6 membered heterocyclyl, each optionally substituted with one to three R_x;

R^{2a} and R^{2b} are independently selected from the group consisting of hydrogen, C₁-C₄ alkyl and C₁-C₄ haloalkyl; or R^{2a} and R^{2b}, together with the atom to which they are attached, are joined to form a C₃-C₆ cycloalkyl;

R³, R⁷ and R⁸ are independently selected from the group consisting of hydrogen, halogen, cyano, C₁-C₄ alkyl, C₂-C₄ alkenyl, C₂-C₄ alkynyl, C₁-C₄ alkoxy, C₁-C₄ haloalkyl, C₁-C₄ haloalkoxy and C₃-C₄ cycloalkyl;

R^4 and R^5 are independently selected from the group consisting of hydrogen, C₁-C₄ alkyl, C₁-C₄ haloalkyl and C₃-C₄ cycloalkyl; or

R^4 and R^5 together with the atom to which they are attached, are joined to form a C₃-C₄ cycloalkyl or C₄ heterocyclyl;

5 R^6 is selected from the group consisting of hydrogen, C₁-C₄ alkyl, C₃-C₄ alkenyl, C₃-C₄ alkynyl, and C₁-C₃ alkoxy-C₁-C₄-alkyl;

Z is selected from the group consisting of C₁-C₇ alkyl, C₃-C₅ cycloalkyl, 3-10 membered heterocyclyl and aryl, each optionally substituted with one to three R_y ;

Y is selected from the group consisting of O and CR_w;

10 R_w is selected from the group consisting of hydrogen, C₁-C₄ alkyl, C₁-C₄ alkoxy, C₁-C₄ haloalkyl, each R_x is, independently of the other, selected from the group consisting of halogen, cyano, C₁-C₄ alkyl, C₁-C₄ haloalkyl, C₁-C₄ alkoxy, C₁-C₄ haloalkoxy, C₁-C₄ alkylcarbonyl, C₁-C₄ alkoxycarbonyl, carboxylic acid, aminocarbonyl, C₁-C₄ aminocarbonyl and C₃-C₄ cycloalkyl;

15 each R_y is, independently of the other, selected from the group consisting of halogen, cyano, nitro, C₁-C₄ alkyl, C₁-C₄ alkoxy, C₁-C₄ haloalkyl, C₁-C₄ haloalkyloxy, C₁-C₄ alkylsulfanyl, C₁-C₄ haloalkylsulfanyl, C₁-C₄ alkylsulfinyl, C₁-C₄ haloalkylsulfinyl, C₁-C₄ alkylsulfonyl, C₁-C₄ haloalkylsulfonyl, C₁-C₄ alkylcarbonyl, C₁-C₄ alkoxycarbonyl, carboxylic acid, aminocarbonyl, C₁-C₄ aminocarbonyl and C₃-C₄ cycloalkyl which cycloalkyl is unsubstituted or substituted by one or more R_z ;

20 each R_z is, independently of the other, selected from the group consisting of halogen, C₁-C₄-alkyl and C₁-C₄-haloalkyl;

wherein Z is not butyl when either R^4 or R^5 is methyl;

and wherein R^1 is not methyl when R^{2a} , R^{2b} , R^3 , R^4 , R^5 , R^6 , R^7 and R^8 are each hydrogen;

or salts or N-oxides thereof;

25 and component B is least one additional active ingredient selected from the group consisting of fungicides/bactericides, insecticides/acaricides and additional plant growth regulators.

The combination will generally be in the form of a composition or mixture which simultaneously contains both the ABA agonist (component A) and the additional active ingredient (component B).

30 The ABA agonists (component (A)) may exist in different geometric or optical isomers (diastereoisomers and enantiomers) or tautomeric forms. This invention covers all such isomers and tautomers and mixtures thereof in all proportions as well as isotopic forms such as deuterated compounds. The invention also covers all salts, N-oxides, and metalloidic complexes of the agonists.

35 Each alkyl moiety either alone or as part of a larger group (such as alkoxy, alkoxycarbonyl, alkylcarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl) is a straight or branched chain and is, for example, methyl, ethyl, *n*-propyl, *n*-butyl, *n*-pentyl, *n*-hexyl, *iso*-propyl, *n*-butyl, *sec*-butyl, *iso*-butyl, *tert*-butyl or *neo*-pentyl. The alkyl groups include C₁ - C₆ alkyl, C₁-C₄ alkyl, and C₁-C₃ alkyl.

The term "alkenyl", as used herein, is an alkyl moiety having at least one carbon-carbon double bond, for example C₂-C₆ alkenyl. Specific examples include vinyl and allyl. The alkenyl moiety may be

part of a larger group (such as alkenoxy, alkenoxycarbonyl, alkenylcarbonyl, alkyenlaminocarbonyl, dialkenylaminocarbonyl).

The term "acetoxyl" refers to $-\text{OC}(=\text{O})\text{CH}_3$.

The term "alkynyl", as used herein, is an alkyl moiety having at least one carbon-carbon triple bond, for example $\text{C}_2\text{-C}_6$ alkynyl. Specific examples include ethynyl and propargyl. The alkynyl moiety may be part of a larger group (such as alkynoxy, alkynoxycarbonyl, alkynylcarbonyl, alkynylaminocarbonyl, dialkynylaminocarbonyl).

Halogen is fluorine (F), chlorine (Cl), bromine (Br) or iodine (I).

Haloalkyl groups (either alone or as part of a larger group, such as haloalkoxy or haloalkylthio) are alkyl groups which are substituted with one or more of the same or different halogen atoms and are, for example, $-\text{CF}_3$, $-\text{CF}_2\text{Cl}$, $-\text{CH}_2\text{CF}_3$ or $-\text{CH}_2\text{CHF}_2$.

Hydroxyalkyl groups are alkyl groups which are substituted with one or more hydroxyl group and are, for example, $-\text{CH}_2\text{OH}$, $-\text{CH}_2\text{CH}_2\text{OH}$ or $-\text{CH}(\text{OH})\text{CH}_3$.

Alkoxyalkyl groups are an alkoxy group bonded to an alkyl (R-O-R'), for example $-(\text{CH}_2)_r\text{O}(\text{CH}_2)_s\text{CH}_3$, wherein r is 1 to 6, and s is 1 to 5.

In the context of the present specification the term "aryl" refers to a ring system which may be mono-, bi- or tricyclic. Examples of such rings include phenyl, naphthalenyl, anthracenyl, indenyl or phenanthrenyl.

Unless otherwise indicated, alkenyl and alkynyl, on their own or as part of another substituent, may be straight or branched chain and may contain 2 to 6 carbon atoms, and where appropriate, may be in either the (*E*)- or (*Z*)-configuration. Examples include vinyl, allyl, ethynyl and propargyl.

Unless otherwise indicated, cycloalkyl may be mono- or bi-cyclic, may be optionally substituted by one or more $\text{C}_1\text{-C}_6$ alkyl groups, and contain 3 to 7 carbon atoms. Examples of cycloalkyl include cyclopropyl, 1-methylcyclopropyl, 2-methylcyclopropyl, cyclobutyl, cyclopentyl and cyclohexyl.

The term "heterocyclyl" refers to a ring system containing from one to four heteroatoms selected from N, O and S, wherein the nitrogen and sulphur atoms are optionally oxidized, and the nitrogen atom(s) are optionally quaternized. Heterocyclyl includes heteroaryl, saturated analogs, and in addition their unsaturated or partially unsaturated analogues such as 4,5,6,7-tetrahydro-benzothiophenyl, 9H-fluorenyl, 3,4-dihydro-2H-benzo-1,4-dioxepinyl, 2,3-dihydro-benzofuranyl, piperidinyl, 1,3-dioxolanyl, 1,3-dioxanyl, 4,5-dihydro-isoxazolyl, tetrahydrofuranyl and morpholinyl. In addition, the term "heterocyclyl" includes heterocycloalkyl, a non-aromatic monocyclic or polycyclic ring comprising carbon and hydrogen atoms and at least one heteroatom selected from nitrogen, oxygen, and sulfur such as oxetanyl or thietanyl. A monocyclic heterocycloalkyl may contain 3 to 7 members.

The term "heteroaryl" refers to an aromatic ring system containing from one to four heteroatoms selected from N, O, and S, wherein the nitrogen and sulfur atoms are optionally oxidized, for example having 5, 6, 9 or 10 members, and consisting either of a single ring or of two or more fused rings. Single rings may contain up to three heteroatoms, and bicyclic systems up to four heteroatoms, which will preferably be chosen from nitrogen, oxygen and sulfur. Examples of such groups include pyridyl, pyridazinyl, pyrimidinyl, pyrazinyl, furanyl, thienyl, oxazolyl, isoxazolyl, oxadiazolyl, thiazolyl, isothiazolyl, thiadiazolyl, pyrrolyl, pyrazolyl, imidazolyl, triazolyl and tetrazolyl.

Preferred values of R¹, R^{2a}, R^{2b}, R³, R⁴, R⁵, R⁶, R⁷, R⁸, Z, Y, R_w, R_x, R_y and R_z are, in any combination, as set out below.

Preferably R¹ is selected from the group consisting of C₁-C₆ alkyl, C₁-C₆ haloalkyl, C₃-C₅ cycloalkyl-C₁-C₆ alkyl, C₃-C₆ alkenyl, C₃-C₆ alkynyl, phenyl and a 4-6 membered heterocyclyl, each optionally substituted with one to three R_x.

Preferably R¹ is selected from the group consisting of C₁-C₆ alkyl, C₁-C₆ haloalkyl, C₃-C₆ alkenyl and C₃-C₅-cycloalkyl-C₁-C₆ alkyl, each optionally substituted with one to three R_x. Preferably R¹ is selected from the group consisting of C₁-C₆ alkyl, C₃-C₅ alkenyl, C₃-C₅-cycloalkyl-C₁-C₂ alkyl, C₁-C₄-alkoxy-ethyl and C₂-C₄ haloalkyl. Preferably, R¹ is ethyl, isopropyl, *n*-propyl, allyl, cyclopropyl-methyl, methoxy-ethyl, 2,2,2-trifluoro-ethyl, 2,2-difluoro-ethyl or 3-fluoro-propyl. The alkyl chain may be branched or linear. In one embodiment R¹ is methyl. In one embodiment R¹ is ethyl. In one embodiment R¹ is *n*-propyl or iso-propyl. In one embodiment R¹ is *n*-butyl, iso-butyl, *sec*-butyl or *tert*-butyl. In one embodiment R¹ is allyl, cyclopropyl-methyl, 2,2,2-trifluoro-ethyl, 2,2-difluoro-ethyl or 3-fluoro-propyl. In one embodiment R¹ is 3-fluoro-propyl or *n*-propyl.

Preferably R^{2a} and R^{2b} are independently selected from the group consisting of hydrogen and C₁-C₄ alkyl. Preferably R^{2a} and R^{2b} are independently selected from the group consisting of hydrogen and methyl. In one embodiment, R^{2a} is hydrogen. In one embodiment, R^{2a} is methyl. In one embodiment, R^{2a} is methyl and R^{2b} is hydrogen.

Preferably R³ is selected from the group consisting of hydrogen, halogen, cyano, C₁-C₄ alkyl and C₁-C₄ alkoxy. Preferably R³ is selected from the group consisting of hydrogen, halogen and C₁-C₄ alkyl. In one embodiment, R³ is methyl. In one embodiment, R³ is fluoro.

Preferably each of R⁴ and R⁵ are independently selected from the group consisting of hydrogen and C₁-C₄ alkyl. Preferably each of R⁴ and R⁵ is independently hydrogen or methyl.

Preferably R⁶ is hydrogen.

Preferably each of R⁷ and R⁸ are independently selected from the group consisting of hydrogen, halogen, cyano, C₁-C₄ alkyl and C₁-C₄ alkoxy.

Z may be selected from the group consisting of C₁-C₇ alkyl, C₃-C₅ cycloalkyl, 3-10 membered heterocyclyl and aryl, each optionally substituted with one to three R_y;

Y may be selected from the group consisting of O and CR_w;

In one embodiment, Y is O. In another embodiment, Y is CR_w.

Preferably R_w is selected from the group consisting of hydrogen, C₁-C₄ alkyl and C₁-C₄ alkoxy. In one embodiment, R_w is selected from the group consisting of hydrogen, methyl, ethyl and methoxy. In a further embodiment, R_w is hydrogen or methyl.

Preferably R_x is selected from the group consisting of halogen, C₁-C₄ alkyl, C₁-C₄ haloalkyl and C₁-C₄ alkoxy. Preferably R_x is selected from the group consisting of halogen and C₁-C₄ alkyl. In one embodiment, R_x is halogen. In a further embodiment, R_x is methyl. In a further embodiment, R_x is ethyl. In a further embodiment, R_x is methoxy.

Preferably R_y is selected from the group consisting of halogen, cyano, nitro, C₁-C₄ alkyl, C₁-C₄ alkoxy, C₁-C₄ haloalkyl, C₁-C₄ haloalkoxy, C₁-C₄ haloalkylsulfanyl and C₃-C₄ cycloalkyl. Preferably, R_y is selected from the group consisting of halogen, C₁-C₄ haloalkyl and C₁-C₄ alkyl. In one embodiment,

R_y is selected from the group consisting of cyano, methyl, ethyl, cyclopropyl, trifluoromethyl, difluoromethyl, trifluoromethoxy, difluoromethoxy and trifluoromethylsulfanyl. In one embodiment, each R_y is selected from the group consisting of halogen, cyano, methyl, ethyl, propyl, cyclopropyl and butyl. In a further embodiment, each R_y is selected from the group consisting of F, Cl, and Br. In one embodiment, R_y is fluoro. In another embodiment, R_y is difluoromethyl. In another embodiment, R_y is trifluoromethyl. In another embodiment, R_y is C₁-C₄ haloalkylsulfanyl.

Preferably R_z is selected from the group consisting of halogen and C₁-C₄-alkyl. In one embodiment, R_z is halogen.

In one embodiment of the compound formula (I) present in the composition, R^{2a} is methyl, and R^{2b} , R^3 , R^4 , R^5 , R^6 , R^7 and R^8 are hydrogen.

In one embodiment of the compound of formula (I) present in the composition:

R^1 is selected from the group consisting of C₁-C₆ alkyl, C₃-C₅-cycloalkyl-C₁-C₆ alkyl, C₃-C₆ alkenyl, C₁-C₃ alkoxy-C₁-C₆ alkyl and C₁-C₆ haloalkyl;

R^{2a} and R^{2b} are independently selected from the group consisting of hydrogen and C₁-C₄ alkyl; R^3 , R^7 and R^8 are each independently selected from the group consisting of hydrogen, halogen, cyano, C₁-C₄ alkyl, and C₁-C₄ alkoxy;

R^4 and R^5 are each independently selected from the group consisting of hydrogen and C₁-C₄ alkyl;

R^6 is hydrogen;

Y is O;

Z is selected from the group consisting of C₁-C₇ alkyl, C₃-C₅ cycloalkyl, 3-10 membered heterocyclyl and aryl, each optionally substituted with one to three R_y ; and

R_y is selected from the group consisting of cyano, halogen, C₁-C₄ alkyl and C₁-C₄ haloalkyl.

In a further embodiment of the compound of formula (I) present in the composition:

R^1 is selected from the group consisting of C₁-C₆ alkyl, C₃-C₅-cycloalkyl-C₁-C₆ alkyl and C₁-C₆ haloalkyl;

R^{2a} is methyl;

R^{2b} , R^3 , R^6 , R^7 and R^8 are hydrogen;

R^4 and R^5 are each independently selected from the group consisting of hydrogen and C₁-C₄ alkyl;

Y is O;

Z is selected from the group consisting of, C₁-C₇ alkyl, C₃-C₅ cycloalkyl, 3-10 membered heterocyclyl and aryl, each optionally substituted with one to three R_y ; and

R_y is selected from the group consisting of cyano, halogen, C₁-C₄ alkyl, and C₁-C₄ haloalkyl.

In a further embodiment of the compound of formula (I) present in the composition:

R¹ is selected from the group consisting of C₁-C₆ alkyl, C₃-C₅-cycloalkyl-C₁-C₆ alkyl and C₁-C₆ haloalkyl;

R^{2a} is methyl;

R³ is fluorine

5 R^{2b}, R⁶, R⁷ and R⁸ are hydrogen;

R⁴ and R⁵ are each independently selected from the group consisting of hydrogen and C₁-C₄ alkyl;

Y is O;

10 Z is selected from the group consisting of, C₁-C₇ alkyl, C₃-C₅ cycloalkyl, 3-10 membered heterocyclyl and aryl, each optionally substituted with one to three R_y; and

R_y is selected from the group consisting of cyano, halogen, C₁-C₄ alkyl, and C₁-C₄ haloalkyl.

15 In a further preferred embodiment of the compound of formula (I), R¹ is ethyl or propyl, Z is selected from the group consisting of C₁-C₇ alkyl, phenyl and 3-6 membered heteroaryl, each optionally substituted with one to three R_y.

In a further embodiment of the compound of formula (I) Z is phenyl optionally substituted with one to three substituents independently selected from the group consisting of halogen, C₁-C₄ haloalkyl, C₁-C₄ alkyl and C₁-C₄ haloalkoxy.

20 In a further embodiment of the compound of formula (I) Y is CH₂.

Specific examples of compounds of formula (I) include: N-[(1-ethyl-4-methyl-2-oxo-4H-3,1-benzoxazin-6-yl)methyl]-benzenesulfonamide, ethyl-4-methyl-2-oxo-4H-3,1-benzoxazin-6-yl)methyl]-2,4-difluoro-benzenesulfonamide, 4-methyl-N-[(4-methyl-2-oxo-1-propyl-4H-3,1-benzoxazin-6-yl)methyl]benzenesulfonamide, N-[(4-methyl-2-oxo-1-propyl-4H-3,1-benzoxazin-6-yl)methyl]-2,4-difluoro-benzenesulfonamide, N-[(4-methyl-2-oxo-1-propyl-4H-3,1-benzoxazin-6-yl)methyl]-benzenesulfonamide, N-[[8-fluoro-1-(3-fluoropropyl)-4-methyl-2-oxo-4H-3,1-benzoxazin-6-yl)methyl]benzenesulfonamide, N-[[8-fluoro-1-(2-methoxyethyl)-4-methyl-2-oxo-4H-3,1-benzoxazin-6-yl)methyl]benzenesulfonamide, 5-chloro-N-[[1-(2-methoxyethyl)-4-methyl-2-oxo-4H-3,1-benzoxazin-6-yl)methyl]thiophene-2-sulfonamide, 5-chloro-N-[[1-(2,2-difluoroethyl)-4-methyl-2-oxo-4H-3,1-benzoxazin-6-yl)methyl]thiophene-2-sulfonamide, 5-chloro-N-[[4-methyl-2-oxo-1-(2,2,2-trifluoroethyl)-4H-3,1-benzoxazin-6-yl)methyl]thiophene-2-sulfonamide, 5-chloro-N-[[1-(cyclopropylmethyl)-4-methyl-2-oxo-4H-3,1-benzoxazin-6-yl)methyl]thiophene-2-sulfonamide, N-[[1-(2,2-difluoroethyl)-4-methyl-2-oxo-4H-3,1-benzoxazin-6-yl)methyl]-4-fluoro-benzenesulfonamide, 4-fluoro-N-[[4-methyl-2-oxo-1-(2,2,2-trifluoroethyl)-4H-3,1-benzoxazin-6-yl)methyl]benzenesulfonamide, 4-fluoro-N-[[1-(2-methoxyethyl)-4-methyl-2-oxo-4H-3,1-benzoxazin-6-yl)methyl]benzenesulfonamide, N-[[1-(2,2-difluoroethyl)-4-methyl-2-oxo-4H-3,1-benzoxazin-6-yl)methyl]benzenesulfonamide, N-[[1-(3-fluoropropyl)-4-methyl-2-oxo-4H-3,1-benzoxazin-6-yl)methyl]benzenesulfonamide, N-[[1-(cyclopropylmethyl)-4-methyl-2-oxo-4H-3,1-benzoxazin-6-yl)methyl]benzenesulfonamide, N-[[4-methyl-2-oxo-1-(2,2,2-trifluoroethyl)-4H-3,1-benzoxazin-6-yl)methyl]benzenesulfonamide, N-[[1-(2-

methoxyethyl)-4-methyl-2-oxo-4*H*-3,1-benzoxazin-6-yl)methyl]benzenesulfonamide, *N*-[(1-ethyl-8-fluoro-4-methyl-2-oxo-4*H*-3,1-benzoxazin-6-yl)methyl]benzenesulfonamide, *N*-[(8-fluoro-4-methyl-2-oxo-1-propyl-4*H*-3,1-benzoxazin-6-yl)methyl]benzenesulfonamide, 5-chloro-*N*-[(4-methyl-2-oxo-1-propyl-4*H*-3,1-benzoxazin-6-yl)methyl]thiophene-2-sulfonamide, 5-chloro-*N*-[(1-ethyl-4-methyl-2-oxo-4*H*-3,1-benzoxazin-6-yl)methyl]thiophene-2-sulfonamide, *N*-[(2-oxo-1-propyl-4*H*-3,1-benzoxazin-6-yl)methyl]benzenesulfonamide, *N*-[(8-fluoro-4-methyl-2-oxo-1-propyl-4*H*-3,1-benzoxazin-6-yl)methyl]benzenesulfonamide, and 5-chloro-*N*-[[1-(2-methoxyethyl)-4-methyl-2-oxo-4*H*-3,1-benzoxazin-6-yl)methyl]thiophene-2-sulfonamide, *N*-[[4-methyl-2-oxo-1-(2,2,2-trifluoroethyl)-3,4-dihydroquinolin-6-yl)methyl]benzenesulfonamide, 4-difluoro-*N*-[[4-methyl-2-oxo-1-(2,2,2-trifluoroethyl)-3,4-dihydroquinolin-6-yl)methyl]benzenesulfonamide, *N*-[(1-ethyl-4-methyl-2-oxo-3,4-dihydroquinolin-6-yl)methyl]-2,4-difluoro-benzenesulfonamide, *N*-[(1-ethyl-4-methyl-2-oxo-3,4-dihydroquinolin-6-yl)methyl]benzenesulfonamide, *N*-[(2-oxo-1-propyl-3,4-dihydroquinolin-6-yl)methyl]benzenesulfonamide, 2,4-difluoro-*N*-[(2-oxo-1-propyl-3,4-dihydroquinolin-6-yl)methyl]benzenesulfonamide, 2,6-difluoro-*N*-[(2-oxo-1-propyl-3,4-dihydroquinolin-6-yl)methyl]benzenesulfonamide, 4-fluoro-*N*-[(2-oxo-1-propyl-3,4-dihydroquinolin-6-yl)methyl]benzenesulfonamide, *N*-[[1-(cyclopropylmethyl)-4-methyl-2-oxo-3,4-dihydroquinolin-6-yl)methyl]benzenesulfonamide, *N*-[[1-(cyclopropylmethyl)-4-methyl-2-oxo-3,4-dihydroquinolin-6-yl)methyl]-2,4-difluoro-benzenesulfonamide, *N*-[(1-ethyl-8-fluoro-4-methyl-2-oxo-3,4-dihydroquinolin-6-yl)methyl]benzenesulfonamide, and *N*-[(8-fluoro-2-oxo-1-propyl-3,4-dihydroquinolin-6-yl)methyl]benzenesulfonamide.

In the present inventive composition, component (B) is selected from the group consisting of petroleum oils, 1,1-bis(4-chlorophenyl)-2-ethoxyethanol, 2,4-dichlorophenyl benzenesulfonate, 2-fluoro-*N*-methyl-*N*-1-naphthylacide, 4-chlorophenyl phenyl sulfone, abamectin, acequinocyl, acetoprole, acrinathrin, aldicarb, aldoxycarb, alpha-cypermethrin, amidithion, amidoflumet, amidothioate, amiton, amiton hydrogen oxalate, amitraz, aramite, arsenous oxide, azinphos-ethyl, azinphos-methyl, azobenzene, azocyclotin, azothoate, benomyl, benoxafos, benzoximate, benzyl benzoate, bifenazate, bifenthrin, binapacryl, bixafen, brofenvalerate, bromocyclen, bromophos, bromophos-ethyl, bromopropylate, buprofezin, butocarboxim, butoxycarboxim, butylpyridaben, calcium polysulfide, camphechlor, carbanolate, carbaryl, carbofuran, carbophenothion, cymiazole, chino-methionat, chlorbenside, chlordimeform, chlordimeform hydrochloride, chlorfenapyr, chlorfenethol, chlorfenson, chlorfensulfide, chlorfenvinphos, chlorobenzilate, chloromebuform, chloromethiuron, chloropropylate, chlorpyrifos, chlorpyrifos-methyl, chlorthiophos, cinerin I, cinerin II, cinerins, clofentezine, closantel, coumaphos, crotamiton, crotoxyphos, cufraneb, cyanthoate, cyflumetofen, cyhalothrin, cyhexatin, cypermethrin, DCPM, DDT, demephion, demephion-O, demephion-S, demeton, demeton-methyl, demeton-O, demeton-O-methyl, demeton-S, demeton-S-methyl, demeton-S-methylsulfon, diafenthiuron, dialifos, diazinon, dichlofluanid, dichlorvos, dicliphos, dicofol, dicrotophos, dienochlor, dimefox, dimethoate, dinactin, dinex, dinex-diclexine, dinobuton, dinocap, dinocap-4, dinocap-6, dinoceton, dinopenton, dinosulfon, dinoterbon, dioxathion, diphenyl sulfone, disulfiram, disulfoton, DNOC, dofenapyn, doramectin, endosulfan, endothion, EPN, eprinomectin, ethion, ethoate-

methyl, etoxazole, etrimfos, fenazaflor, fenazaquin, fenbutatin oxide, fenothiocarb, fenpropathrin, fenpyrad, fenpyroximate, fenpyrazamine, fenson, fentrifanil, fenvalerate, fipronil, fluacrypyrim, fluazuron, flubenzimine, flucycloxuron, flucythrinate, fluenetil, flufenoxuron, flumethrin, fluorbenside, fluvalinate, FMC 1137, formetanate, formetanate hydrochloride, formothion, formparanate, gamma-
 5 HCH, glyodin, halfenprox, heptenophos, hexadecyl cyclopropanecarboxylate, hexythiazox, iodomethane, isocarbophos, jasmolin I, jasmolin II, jodfenphos, lindane, lufenuron, malathion, malonoben, mecarbam, mephosfolan, mesulfen, methacrifos, methamidophos, methidathion, methiocarb, methomyl, methyl bromide, metolcarb, mevinphos, mexacarbate, milbemectin, milbemycin oxime, mipafox, monocrotophos, morphothion, moxidectin, naled, 4-chloro-2-(2-chloro-2-methyl-
 10 propyl)-5-[(6-iodo-3-pyridyl)methoxy]pyridazin-3-one, nifluridide, nikkomycins, nitrilacarb, nitrilacarb 1:1 zinc chloride complex, oxamyl, oxydeprofos, oxydisulfoton, pp'-DDT, parathion, permethrin, phenkapton, phenthoate, phorate, phosalone, phosfolan, phosmet, phosphamidon, phoxim, pirimiphos-methyl, polychloroterpenes, polynactins, proclonol, profenofos, promacyl, propargite, propetamphos, propoxur, prothidathion, prothoate, pyrethrin I, pyrethrin II, pyrethrins, pyridaben, pyridaphenthion,
 15 pyrimidifen, pyrimitate, quinalphos, quintiofos, R-1492, phosglycin, rotenone, schradan, sebufos, selamectin, sophamide, spirodiclofen, spiromesifen, SSI-121, sulfiram, sulfluramid, sulfotep, sulfur, diflovidazin, tau-fluvalinate, tebufenpyrad, TEPP, terbam, tetrachlorvinphos, tetradifon, tetranactin, tetrasul, thiafenox, thiocarboxime, thiofanox, thiometon, thioquinox, thuringiensin, triamiphos, triarathene, triazophos, triazuron, trichlorfon, trifenofos, trinactin, vamidothion, vaniliprole, bethoxazin,
 20 copper dioctanoate, copper sulfate, cybutryne, dichlone, dichlorophen, endothal, fentin, hydrated lime, nabam, quinoclamine, quinonamid, simazine, triphenyltin acetate, triphenyltin hydroxide, crufomate, emamectin, emamectin benzoate, piperazine, spinosad, thiophanate, chloralose, endrin, fenthion, pyridin-4-amine, 1-hydroxy-1H-pyridine-2-thione, 4-(quinoxalin-2-ylamino)benzenesulfonamide, 8-hydroxyquinoline sulfate, bronopol, copper hydroxide, cresol, dipyrithione, dodicin, fenaminosulf,
 25 formaldehyde, hydrargaphen, kasugamycin, kasugamycin hydrochloride hydrate, nickel bis(dimethyldithiocarbamate), nitrapyrin, othilinone, oxolinic acid, oxytetracycline, potassium hydroxyquinoline sulfate, probenazole, streptomycin, streptomycin sesquisulfate, tecloftalam, thiomersal, Adoxophyes orana GV, Agrobacterium radiobacter, Amblyseius spp., Anagrapta falcifera NPV, Anagrus atomus, Aphelinus abdominalis, Aphidius colemani, Aphidoletes aphidimyza,
 30 Autographa californica NPV, Bacillus firmus, Bacillus sphaericus Neide, Bacillus thuringiensis Berliner, Bacillus thuringiensis subsp. aizawai, Bacillus thuringiensis subsp. israelensis, Bacillus thuringiensis subsp. japonensis, Bacillus thuringiensis subsp. kurstaki, Bacillus thuringiensis subsp. tenebrionis, Beauveria bassiana, Beauveria brongniartii, Chrysoperla carnea, Cryptolaemus montrouzieri, Cydia pomonella GV, Dacnusa sibirica, Diglyphus isaea, Encarsia formosa, Eretmocerus eremicus,
 35 Helicoverpa zea NPV, Heterorhabditis bacteriophora and H. megidis, Hippodamia convergens, Leptomastix dactylopii, Macrolophus caliginosus, Mamestra brassicae NPV, Metaphycus helvolus, Metarhizium anisopliae var. acridum, Metarhizium anisopliae var. anisopliae, Neodiprion sertifer NPV and N. lecontei NPV, Orius spp., Paecilomyces fumosoroseus, Phytoseiulus persimilis, Spodoptera exigua multicausid nuclear polyhedrosis virus, Steinernema bibionis, Steinernema carpocapsae,
 40 Steinernema feltiae, Steinernema glaseri, Steinernema riobrave, Steinernema riobravus, Steinernema

scapterisci, Steinernema spp., Trichogramma spp., Typhlodromus occidentalis, Verticillium lecanii, apholate, bisazir, busulfan, diflubenzuron, dimatif, hemel, hempa, metepa, methiotepa, methyl apholate, morzid, penfluron, tepa, thiohempa, thiotepa, tretamine, uredepa, (E)-dec-5-en-1-yl acetate with (E)-dec-5-en-1-ol, (E)-tridec-4-en-1-yl acetate, (E)-6-methylhept-2-en-4-ol, (E,Z)-tetradeca-4,10-dien-1-yl acetate, (Z)-dodec-7-en-1-yl acetate, (Z)-hexadec-11-enal, (Z)-hexadec-11-en-1-yl acetate, (Z)-hexadec-13-en-11-yn-1-yl acetate, (Z)-icos-13-en-10-one, (Z)-tetradec-7-en-1-al, (Z)-tetradec-9-en-1-ol, (Z)-tetradec-9-en-1-yl acetate, (7E,9Z)-dodeca-7,9-dien-1-yl acetate, (9Z,11E)-tetradeca-9,11-dien-1-yl acetate, (9Z,12E)-tetradeca-9,12-dien-1-yl acetate, 14-methyloctadec-1-ene, 4-methylnonan-5-ol with 4-methylnonan-5-one, alpha-multistriatin, brevicomin, codlelure, codlemone, cuelure, disparlure, dodec-8-en-1-yl acetate, dodec-9-en-1-yl acetate, dodeca-8, 10-dien-1-yl acetate, dominicalure, ethyl 4-methyloctanoate, eugenol, frontalinal, gossyplure, grandlure, grandlure I, grandlure II, grandlure III, grandlure IV, hexalure, ipsdienol, ipsenol, japonilure, lineatin, litlure, looplure, medlure, megatomoic acid, methyl eugenol, muscalure, octadeca-2,13-dien-1-yl acetate, octadeca-3,13-dien-1-yl acetate, orfralure, oryctalure, ostramone, siglure, sordidin, sulcatol, tetradec-11-en-1-yl acetate, trimedlure, trimedlure A, trimedlure B₁, trimedlure B₂, trimedlure C, trunc-call, 2-(octylthio)ethanol, butopyronoxyl, butoxy(polypropylene glycol), dibutyl adipate, dibutyl phthalate, dibutyl succinate, diethyltoluamide, dimethyl carbate, dimethyl phthalate, ethyl hexanediol, hexamide, methoquin-butyl, methylneodecanamide, oxamate, picaridin, 1-dichloro-1-nitroethane, 1,1-dichloro-2,2-bis(4-ethylphenyl)ethane, 1,2-dichloropropane, 1,2-dichloropropane with 1,3-dichloropropene, 1-bromo-2-chloroethane, 2,2,2-trichloro-1-(3,4-dichlorophenyl)ethyl acetate, 2,2-dichlorovinyl 2-ethylsulfinyethyl methyl phosphate, 2-(1,3-dithiolan-2-yl)phenyl dimethylcarbamate, 2-(2-butoxyethoxy)ethyl thiocyanate, 2-(4,5-dimethyl-1,3-dioxolan-2-yl)phenyl methylcarbamate, 2-(4-chloro-3,5-xylyloxy)ethanol, 2-chlorovinyl diethyl phosphate, 2-imidazolidone, 2-isovalerylindan-1,3-dione, 2-methyl(prop-2-ynyl)aminophenyl methylcarbamate, 2-thiocyanatoethyl laurate, 3-bromo-1-chloroprop-1-ene, 3-methyl-1-phenylpyrazol-5-yl dimethylcarbamate, 4-methyl(prop-2-ynyl)amino-3,5-xylyl methylcarbamate, 5,5-dimethyl-3-oxocyclohex-1-enyl dimethylcarbamate, acephate, acetamidrid, acethion, acrylonitrile, alanycarb, aldrin, allethrin, allosamidin, allyxycarb, alpha-ecdysone, aluminium phosphide, aminocarb, anabasine, athidathion, azadirachtin, azamethiphos, Bacillus thuringiensis delta endotoxins, barium hexafluorosilicate, barium polysulfide, barthrin, Bayer 22/190, Bayer 22408, bendiocarb, benfuracarb, bensultap, beta-cyfluthrin, beta-cypermethrin, bioallethrin, bioallethrin S-cyclopentenyl isomer, bioethanomethrin, biopermethrin, bioresmethrin, bis(2-chloroethyl) ether, bistrifluron, borax, bromfenvinfos, bromo-DDT, bufencarb, butacarb, butathiofos, butonate, cadusafos, calcium arsenate, calcium cyanide, carbon disulfide, carbon tetrachloride, carbosulfan, cartap, cartap hydrochloride, cevadine, chlorbicyclen, chlordane, chlordecone, chlorethoxyfos, chlorfluazuron, chlormephos, chloroform, chloropicrin, chlorphoxim, chlorprazophos, chromafenozide, cis-resmethrin, cismethrin, clocythrin, cloethocarb, clothianidin, copper acetoarsenite, copper arsenate, copper oleate, coumithoate, cryolite, CS 708, cyanofenphos, cyanophos, cyclethrin, cycloprothrin, cyfluthrin, cyphenothrin, cyromazine, cythioate, d-limonene, d-tetramethrin, DAEP, dazomet, decarbofuran, deltamethrin, diamidafos, dicapthon, dichlofenthion, dicresyl, dicyclanil, dieldrin, diethyl 5-methylpyrazol-3-yl phosphate, dilor, dimefluthrin, dimetan, dimethrin, dimethylvinphos, dimetilan,

dinoprop, dinosam, dinoseb, dinotefuran, diofenolan, dioxabenzofos, dioxacarb, dithicrofos, DSP, ecdysterone, EI 1642, EMPC, empenthrin, EPBP, epofenonane, esfenvalerate, etaphos, ethiofencarb, ethiprole, ethoprophos, ethyl formate, ethylene dibromide, ethylene dichloride, ethylene oxide, etofenprox, EXD, famphur, fenamiphos, fenchlorphos, fenethacarb, fenfluthrin, fenitrothion,

5 fenobucarb, fenoxacrim, fenoxycarb, fenpirithrin, fensulfothion, fenthion-ethyl, flonicamid, flubendiamide, flucofuron, flufenimer, flufenprox, fonofos, fosmethilan, fospirate, fosthiazate, fosthietan, furathiocarb, furethrin, gamma-cyhalothrin, guazatine, guazatine acetates, sodium tetrathiocarbonate, halfenprox, halofenozide, HCH, HEOD, heptachlor, heterophos, hexaflumuron, HHDN, hydramethylnon, hydrogen cyanide, hydroprene, hyquincarb, imidacloprid, imiprothrin, indoxacarb,

10 IPSP, isazofos, isobenzan, isodrin, isofenphos, isolane, isoprocab, isoprothiolane, isothioate, isoxathion, juvenile hormone I, juvenile hormone II, juvenile hormone III, kelevan, kinoprene, lambda-cyhalothrin, lead arsenate, lepimectin, leptophos, lirimos, lythidathion, m-cumenyl methylcarbamate, magnesium phosphide, mazidox, mecarphon, menazon, mercurous chloride, mesulfenfos, metaflumizone, metam, metam-potassium, metam-sodium, methanesulfonyl fluoride, methocrotophos,

15 methoprene, methothrin, methoxychlor, methoxyfenozide, methyl isothiocyanate, methylchloroform, methylene chloride, metofluthrin, metoxadiazon, mirex, naftalofos, naphthalene, NC-170, nicotine, nicotine sulfate, nitenpyram, nithiazine, nornicotine, novaluron, noviflumuron, O-5-dichloro-4-iodophenyl O-ethyl ethylphosphonothioate, O,O-diethyl O-4-methyl-2-oxo-2H-chromen-7-yl phosphorothioate, O,O-diethyl O-6-methyl-2-propylpyrimidin-4-yl phosphorothioate, O,O,O',O'-

20 tetrapropyl dithiopyrophosphate, oleic acid, oxydemeton-methyl, para-dichlorobenzene, parathion-methyl, pentachlorophenol, pentachlorophenyl laurate, permethrin, PH 60-38, phenkapton, phenothrin, phosnichlor, phosphine, phoxim-methyl, pirimethaphos, pirimicarb, pirimiphos-ethyl, polychlorodicyclopentadiene isomers, potassium arsenite, potassium thiocyanate, prallethrin, precocene I, precocene II, precocene III, primidophos, profluthrin, promecarb, propaphos, prothiofos,

25 protrifenbute, pymetrozine, pyraclofos, pyrazophos, pyresmethrin, pyridalyl, pyriproxyfen, quassia, quinalphos-methyl, quinothion, rafoxanide, resmethrin, rotenone, kadethrin, ryania, ryanodine, sabadilla, schradan, sebufos, selamectin, SI-0009, silafluofen, thiapronil, sodium arsenite, sodium cyanide, sodium fluoride, sodium hexafluorosilicate, sodium pentachlorophenoxide, sodium selenate, sodium thiocyanate, spirotetramat, sulcofuron, sulcofuron-sodium, sulfuryl fluoride, sulprofos, tar oils,

30 tazimcarb, TDE, tebufenozide, tebupirimfos, teflubenzuron, tefluthrin, temephos, terallethrin, terbufos, tetrachloroethane, tetramethrin, theta-cypermethrin, thiacloprid, thiamethoxam, thicrofos, thiocyclam, thiocyclam hydrogen oxalate, thiodicarb, thionazin, thiosultap, thiosultap-sodium, tolfenpyrad, tralomethrin, transfluthrin, transpermethrin, triazamate, trichlormetaphos-3, trichloronat, triflumuron, trimethacarb, tolprocab, triclopyricarb, triprene, veratridine, veratrine, XMC, xylylcarb, zeta-

35 cypermethrin, zetamethrin, zinc phosphide, zolaprofos, and brofluthrin, cyantraniliprole, chlorantraniliprole, cyenopyrafen, pyrifluquinazon, spinetoram, sulfoxaflor, flupirrole, meperfluthrin, tetramethylfluthrin, triflumezopyrim, bis(tributyltin) oxide, bromoacetamide, ferric phosphate, metaldehyde, niclosamide, niclosamide-olamine, tributyltin oxide, pyrimorph, trifenmorph, pyriprole, imicyafos, 1,2-dibromo-3-chloropropane, 1,3-dichloropropene, 3,4-dichlorotetrahydrothiophene 1,1-

40 dioxide, 3-(4-chlorophenyl)-5-methylrhodanine, 5-methyl-6-thioxo-1,3,5-thiadiazinan-3-ylacetic acid, 6-

isopentenylaminopurine, benclothiaz, cytokinins, DCIP, furfural, isamidofos, kinetin, Myrothecium verrucaria composition, phosphocarb, tetrachlorothiophene, xylenols, zeatin, fluensulfone, potassium ethylxanthate, acibenzolar, acibenzolar-S-methyl, Reynoutria sachalinensis extract, alpha-chlorohydrin, antu, barium carbonate, bisthiosemi, brodifacoum, bromadiolone, bromethalin, 5 chlorophacinone, cholecalciferol, coumachlor, coumafuryl, coumatetralyl, crimidine, difenacoum, difethialone, diphacinone, ergocalciferol, flocoumafen, fluoroacetamide, flupropadine, flupropadine hydrochloride), norbormide, phosacetim, phosphorus, pindone, pyrinuron, scilliroside, sodium fluoroacetate, thallium sulfate, warfarin, 2-(2-butoxyethoxy)ethyl piperonylate, 5-(1,3-benzodioxol-5-yl)-3-hexylcyclohex-2-enone, farnesol with nerolidol, verbutin, MGK 264, piperonyl butoxide, piprotal, propyl isomer, S421, sesamex, sesasmolin, sulfoxide, anthraquinone, copper naphthenate, copper 10 oxychloride, dicyclopentadiene), thiram, zinc naphthenate, ziram, imanin, ribavirin, mercuric oxide, thiophanate-methyl, azaconazole, bitertanol, bromuconazole, cyproconazole, difenoconazole, diniconazole, epoxiconazole, fenbuconazole, fluquinconazole, flusilazole, flutriafol, furametpyr, hexaconazole, imazalil, imibenconazole, ipconazole, metconazole, myclobutanil, paclobutrazole, 15 pefurazate, penconazole, prothioconazole, pyrifenoxy, prochloraz, propiconazole, pyrisoxazole, simeconazole, tebuconazole, tetraconazole, triadimefon, triadimenol, triflumizole, triticonazole, ancymidol, fenarimol, nuarimol, bupirimate, dimethirimol, ethirimol, dodemorph, fenpropidine, fenpropimorph, spiroxamine, tridemorph, cyprodinil, mepanipyrim, pyrimethanil, fencpiclonil, fludioxonil, benalaxyl, furalaxyl, metalaxyl, R-metalaxyl, ofurace, oxadixyl, carbendazim, debacarb, fuberidazole, 20 thiabendazole, chlozoline, dichlozoline, iprodione, myclozoline, procymidone, vinclozoline, boscalid, carboxin, fenfuram, flutolanil, mepronil, oxycarboxin, penthiopyrad, thifluzamide, dodine, iminoctadine, azoxystrobin, dimoxystrobin, enestroburin, fenaminostrobin, flufenoxystrobin, fluoxystrobin, kresoxim-methyl, metominostrobin, trifloxystrobin, orysastrobin, picoxystrobin, pyraclostrobin, pyrametostrobin, pyraoxystrobin, ferbam, mancozeb, maneb, metiram, propineb, zineb, captafol, captan, fluoroimide, 25 folpet, tolylfluanid, bordeaux mixture, copper oxide, mancopper, oxine-copper, nitrothal-isopropyl, edifenphos, iprobenphos, phosdiphen, tolclofos-methyl, anilazine, benthiavalicarb, blasticidin-S, chloroneb, chlorothalonil, cyflufenamid, cymoxanil, diclocymet, diclomezine, dicloran, diethofencarb, dimethomorph, flumorph, dithianon, ethaboxam, etridiazole, famoxadone, fenamidone, fenoxanil, ferimzone, fluazinam, fluopicolide, flusulfamide, fluxapyroxad, fenhexamid, fosetyl-aluminium, 30 hymexazol, iprovalicarb, cyazofamid, methasulfocarb, metrafenone, pencycuron, phthalide, polyoxins, propamocarb, pyribencarb, proquinazid, pyroquilon, pyriofenone, quinoxifen, quintozone, tiadinil, triazoxide, tricyclazole, triforine, validamycin, valifenalate, zoxamide, mandipropamid, isopyrazam, sedaxane, benzovindiflupyr, pydiflumetofen, 3-difluoromethyl-1-methyl-1H-pyrazole-4-carboxylic acid (3',4',5'-trifluoro-biphenyl-2-yl)-amide, afidopyropen, pyflubumide, isoflucypram, isotianil, dipymetitrone, 35 6-ethyl-5,7-dioxo-pyrrolo[4,5][1,4]dithiino[1,2-c]isothiazole-3-carbonitrile, 2-(difluoromethyl)-N-[3-ethyl-1,1-dimethyl-indan-4-yl]pyridine-3-carboxamide, 4-(2,6-difluorophenyl)-6-methyl-5-phenyl-pyridazine-3-carbonitrile, (R)-3-(difluoromethyl)-1-methyl-N-[1,1,3-trimethylindan-4-yl]pyrazole-4-carboxamide, 4-(2-bromo-4-fluoro-phenyl)-N-(2-chloro-6-fluoro-phenyl)-2,5-dimethyl-pyrazol-3-amine, 4-(2-Bromo-4-fluorophenyl)-N-(2-chloro-6-fluorophenyl)-1,3-dimethyl-1H-pyrazol-5-amine, fluindapyr, jiaxiangjunzhi, 40 lvbenmixianan, dichlobentiazox, mandestrobin, 3-(4,4-difluoro-3,4-dihydro-3,3-dimethylisoquinolin-1-

yl)quinolone, 2-[2-fluoro-6-[(8-fluoro-2-methyl-3-quinolyl)oxy]phenyl]propan-2-ol, oxathiapirolin, tert-butyl N-[6-[[[(1-methyltetrazol-5-yl)-phenyl-methylene]amino]oxymethyl]-2-pyridyl]carbamate, pyraziflumid, inpyrflumax, trolprocarb, mefentrifluconazole, ipfentrifluconazole, 2-(difluoromethyl)-N-[(3R)-3-ethyl-1,1-dimethyl-indan-4-yl]pyridine-3-carboxamide, N'-(2,5-dimethyl-4-phenoxy-phenyl)-N-ethyl-N-methyl-formamidine, N'-[4-(4,5-dichlorothiazol-2-yl)oxy-2,5-dimethyl-phenyl]-N-ethyl-N-methyl-formamidine, [2-[3-[2-[1-[2-[3,5-bis(difluoromethyl)pyrazol-1-yl]acetyl]-4-piperidyl]thiazol-4-yl]-4,5-dihydroisoxazol-5-yl]-3-chloro-phenyl] methanesulfonate, but-3-ynyl N-[6-[(Z)-[(1-methyltetrazol-5-yl)-phenyl-methylene]amino]oxymethyl]-2-pyridyl]carbamate, methyl N-[[5-[4-(2,4-dimethylphenyl)triazol-2-yl]-2-methyl-phenyl]methyl]carbamate, 3-chloro-6-methyl-5-phenyl-4-(2,4,6-trifluorophenyl)pyridazine, pyridachlometyl, 3-(difluoromethyl)-1-methyl-N-[1,1,3-trimethylindan-4-yl]pyrazole-4-carboxamide, 1-[2-[[1-(4-chlorophenyl)pyrazol-3-yl]oxymethyl]-3-methyl-phenyl]-4-methyl-tetrazol-5-one, 1-methyl-4-[3-methyl-2-[[2-methyl-4-(3,4,5-trimethylpyrazol-1-yl)phenoxy]methyl]phenyl]tetrazol-5-one, aminopyrifin, ametocradin, amisulbrom, penflufen, (Z,E)-5-[1-(4-chlorophenyl)pyrazol-3-yl]oxy-2-methoxyimino-N,3-dimethyl-pent-3-enamide, florylpicoxamid, fenpicoxamid, trinexapac, trinexapac ethyl, tebufloquin, ipflufenquin, quinofumelin, isofetamid, N-[2-[2,4-dichloro-phenoxy]phenyl]-3-(difluoromethyl)-1-methyl-pyrazole-4-carboxamide, N-[2-[2-chloro-4-(trifluoromethyl)phenoxy]phenyl]-3-(difluoromethyl)-1-methyl-pyrazole-4-carboxamide, benzothiostrobin, phenamacril, 5-amino-1,3,4-thiadiazole-2-thiol zinc salt (2:1), fluopyram, flutianil, fluopimomide, pyrapropoyne, picarbutrazox, 2-(difluoromethyl)-N-(3-ethyl-1,1-dimethyl-indan-4-yl)pyridine-3-carboxamide, 2-(difluoromethyl)-N-((3R)-1,1,3-trimethylindan-4-yl)pyridine-3-carboxamide, 4-[[6-[2-(2,4-difluorophenyl)-1,1-difluoro-2-hydroxy-3-(1,2,4-triazol-1-yl)propyl]-3-pyridyl]oxy]benzonitrile, metyltetraprole, 2-(Difluoromethyl)-N-((3R)-1,1,3-trimethylindan-4-yl)pyridine-3-carboxamide, α -(1,1-dimethylethyl)- α -[4'-(trifluoromethoxy)[1,1'-biphenyl]-4-yl]-5-pyrimidinemethanol, Fluoxapirolin, Enoxastrobin, 4-[[6-[2-(2,4-difluorophenyl)-1,1-difluoro-2-hydroxy-3-(1,2,4-triazol-1-yl)propyl]-3-pyridyl]oxy] benzonitrile, 4-[[6-[2-(2,4-difluorophenyl)-1,1-difluoro-2-hydroxy-3-(5-sulfanyl-1,2,4-triazol-1-yl)propyl]-3-pyridyl]oxy] benzonitrile, 4-[[6-[2-(2,4-difluorophenyl)-1,1-difluoro-2-hydroxy-3-(5-thioxo-4H-1,2,4-triazol-1-yl)propyl]-3-pyridyl]oxy]benzonitrile, Fluoxapirolin, Enoxastrobin, 4-[[6-[2-(2,4-difluorophenyl)-1,1-difluoro-2-hydroxy-3-(1,2,4-triazol-1-yl)propyl]-3-pyridyl]oxy] benzonitrile, 4-[[6-[2-(2,4-difluorophenyl)-1,1-difluoro-2-hydroxy-3-(5-sulfanyl-1,2,4-triazol-1-yl)propyl]-3-pyridyl]oxy] benzonitrile, and 4-[[6-[2-(2,4-difluorophenyl)-1,1-difluoro-2-hydroxy-3-(5-thioxo-4H-1,2,4-triazol-1-yl)propyl]-3-pyridyl]oxy]benzonitrile.

In a preferred embodiment of the composition, component (B) may be selected from the group consisting of benzovindiflupyr, fluxapyroxad, pydiflumetofen, isopyrazam, fluopyram, penthiopyrad, sedaxane, bixafen, difenoconazole, cyproconazole, tebuconazole, hexaconazole, prothioconazole, propiconazole, epoxiconazole, flutriafol, mefentrifluconazole, ipconazole, paclobutrazol, trinexapac, trinexapc ethyl, azoxystrobin, trifloxystrobin, picoxystrobin, pyraclostrobin, metalaxyl-M, fenpropidin, fenpropimorph, cyprodinil, spiroxamine, mancozeb, chlorothalonil, oxathiapirolin, mandipropamid, fluazinam, fludioxinil, fosetyl-aluminium, acibenzolar-S-methyl, procymidone, carbendazim, fenhexamid, prochloraz, prohexadione-calcium, Timorex Gold™ (plant extract comprising tea tree oil),

N'-[5-bromo-2-methyl-6-(1-methyl-2-propoxy-ethoxy)-3-pyridyl]-N-ethyl-N-methyl-formamidine), N'-[5-bromo-2-methyl-6-[(1S)-1-methyl-2-propoxy-ethoxy]-3-pyridyl]-N-ethyl-N-methyl-formamidine, N'-[5-bromo-2-methyl-6-[(1R)-1-methyl-2-propoxy-ethoxy]-3-pyridyl]-N-ethyl-N-methyl-formamidine, N'-[5-bromo-2-methyl-6-(1-methyl-2-propoxy-ethoxy)-3-pyridyl]-N-isopropyl-N-methyl-formamidine, N'-[5-chloro-2-methyl-6-(1-methyl-2-propoxy-ethoxy)-3-pyridyl]-N-ethyl-N-methyl-formamidine, calcium phosphonate, *cis*-jasmonate, trinexapac-ethyl, glyphosate, 2,4-D (2,4-dichlorophenoxyacetic acid) and thiamethoxam.

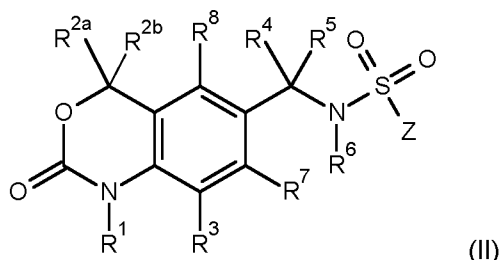
Whilst the skilled agriculturalist will be able to determine the best ratios of the components (A) and (B) in the composition, which will vary within a wide range, generally the weight ratio of component (A) to component (B) is within one of the following: from 100:1 to 1:100, from 50:1 to 1:50, from 20:1 to 1:40, from 15:1 to 1:30, from 12:1 to 1:25, from 10:1 to 1:20, from 5:1 and 1:15, from 3:1 to 1:10 or from 2:1 to 1:5.

The composition may further comprise an agriculturally acceptable formulation adjuvant.

The invention also includes a method for improving the tolerance of a plant to abiotic stress, regulating or improving the growth of a plant, inhibiting seed germination, or improving the yield of a plant, wherein the method comprises applying to the plant, plant part, plant propagation material, or plant growing locus a composition according to the present invention.

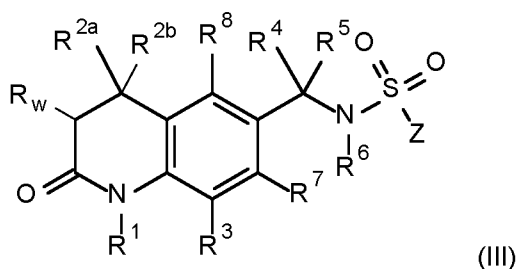
It is particularly preferred that the plant is a soybean plant, wheat or a corn plant.

The structures (II) to (IV) below depict specific preferred embodiments of the compound of formula (I) present in the compositions of the present invention. In a compound of formula (II) which includes salts or N-oxides thereof



the substituents are as defined above. Preferred values of R^1 , R^{2a} , R^{2b} , R^3 , R^4 , R^5 , R^6 , R^7 , R^8 , Z , R_x , R_y and R_z for compounds of formula (II) are, in any combination, as set out above.

In a compound of formula (III), which includes salts or N-oxides thereof

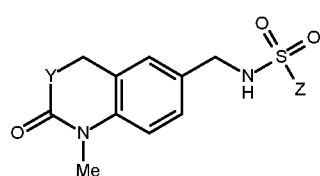


the substituents are as defined above. Preferred values of R^1 , R^{2a} , R^{2b} , R^3 , R^4 , R^5 , R^6 , R^7 , R^8 , Z , R_w , R_x , R_y and R_z for compounds of formula (III) are, in any combination, as set out above.

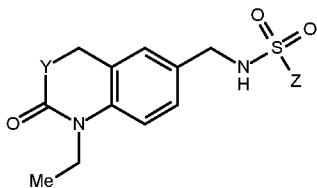
Table 1 below includes examples of compounds of formula (I).

TABLE 1

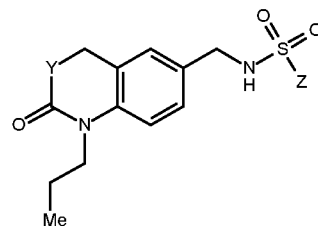
- 5 Each of the following structures may be combined with the substituent combinations listed in the table below, such that specific compound 1.001 is structure 1.xxx combined with compound x.001, specific compound 5.051 is structure 5.xxx combined with compound x.051 in the table, and so on.



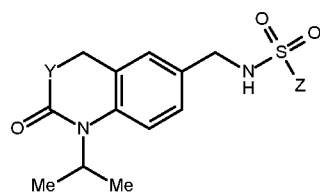
1.xxx



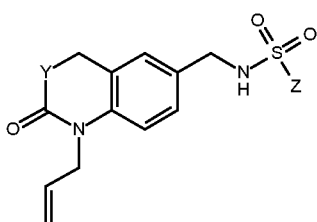
2.xxx



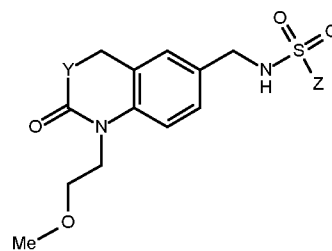
3.xxx



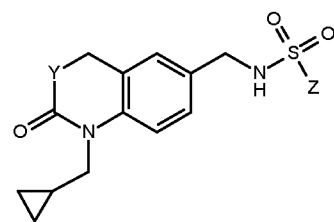
4.xxx



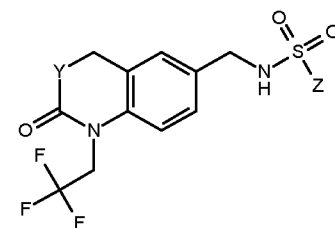
5.xxx



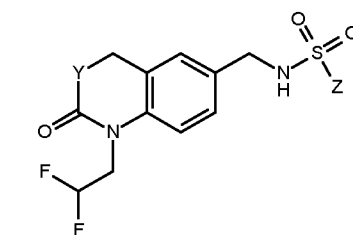
6.xxx



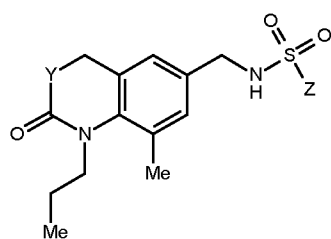
7.xxx



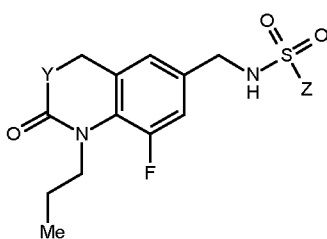
8.xxx



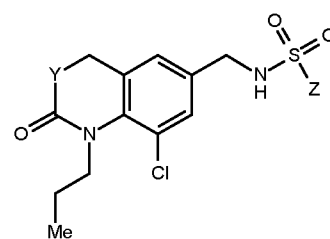
9.xxx



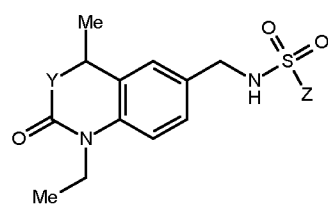
10.xxx



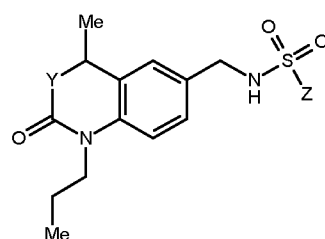
11.xxx



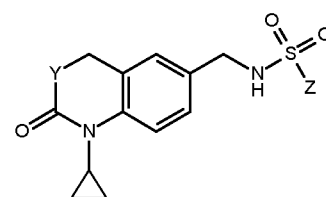
12.xxx



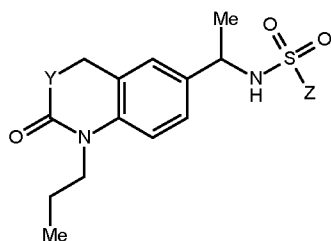
13.xxx



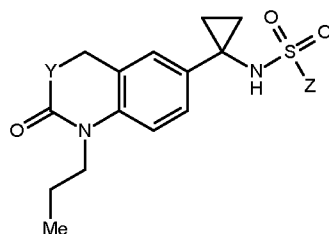
14.xxx



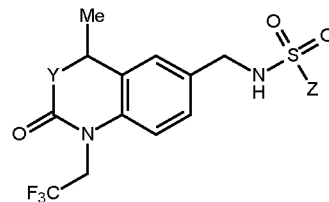
15.xxx



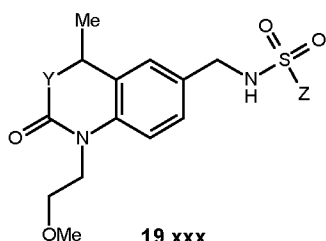
16.xxx



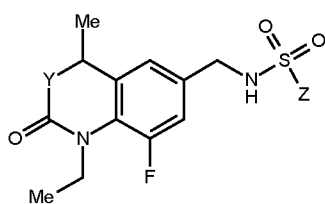
17.xxx



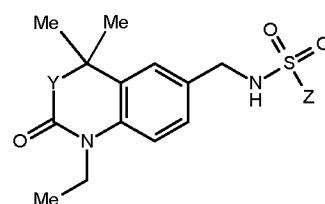
18.xxx



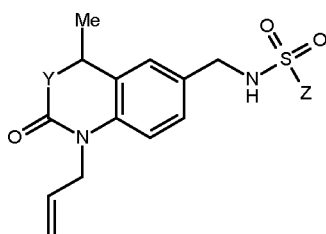
19.xxx



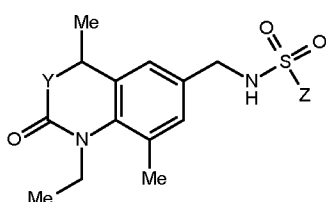
20.xxx



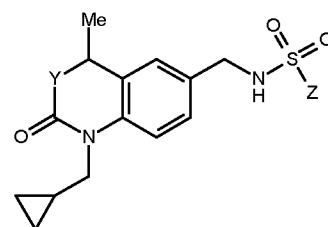
21.xxx



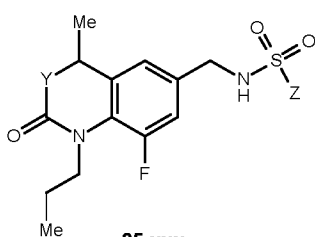
22.xxx



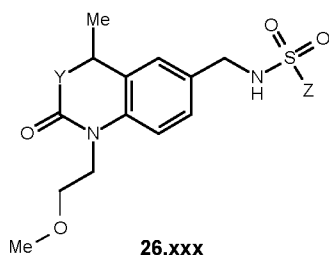
23.xxx



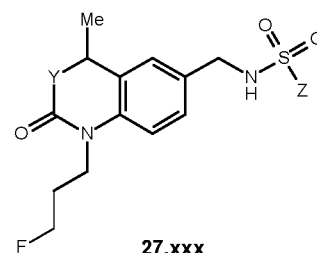
24.xxx



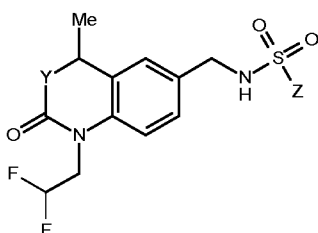
25.xxx



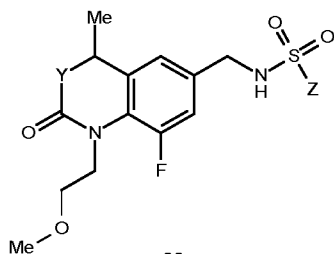
26.xxx



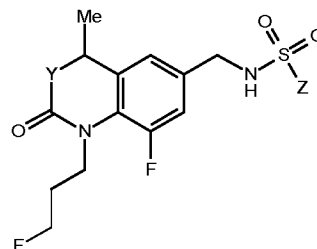
27.xxx



28.xxx



29.xxx



30.xxx

5

Cpd.	Z	Y	Cpd.	Z	Y
x.001	phenyl	O	x.051	4-ethylphenyl	O
x.002	4-bromophenyl	O	x.052	4-propylphenyl	O
x.003	3-chlorophenyl	O	x.053	4-cyclopropylphenyl	O
x.004	4-chlorophenyl	O	x.054	2-fluoro-4-methylphenyl	O
x.005	2,6-difluorophenyl	O	x.055	phenyl	CH2
x.006	2,4-difluorophenyl	O	x.056	4-bromophenyl	CH2

Cpd.	Z	Y	Cpd.	Z	Y
x.007	2-fluorophenyl	O	x.057	3-chlorophenyl	CH2
x.008	3-fluorophenyl	O	x.058	4-chlorophenyl	CH2
x.009	4-fluorophenyl	O	x.059	2,6-difluorophenyl	CH2
x.010	4-methoxyphenyl	O	x.060	2,4-difluorophenyl	CH2
x.011	o-tolyl	O	x.061	2-fluorophenyl	CH2
x.012	p-tolyl	O	x.062	3-fluorophenyl	CH2
x.013	p-tolylmethyl	O	x.063	4-fluorophenyl	CH2
x.014	2,4-dimethylphenyl	O	x.064	4-methoxyphenyl	CH2
x.015	4-(trifluoromethyl)phenyl	O	x.065	o-tolyl	CH2
x.016	4-isopropoxyphenyl	O	x.066	p-tolyl	CH2
x.017	2-bromophenyl	O	x.067	p-tolylmethyl	CH2
x.018	cyclopropyl	O	x.068	2,4-dimethylphenyl	CH2
x.019	butyl	O	x.069	4-(trifluoromethyl)phenyl	CH2
x.020	4,4,4-trifluorobutyl	O	x.070	4-isopropoxyphenyl	CH2
x.021	benzyl	O	x.071	2-bromophenyl	CH2
x.022	4-bromobenzyl	O	x.072	cyclopropyl	CH2
x.023	2-fluorobenzyl	O	x.073	butyl	CH2
x.024	4-methylbenzyl	O	x.074	4,4,4-trifluorobutyl	CH2
x.025	2,4-difluorobenzyl	O	x.075	benzyl	CH2
x.026	2,6-difluorobenzyl	O	x.076	4-bromobenzyl	CH2
x.027	4-(cyclopropyl)benzyl	O	x.077	2-fluorobenzyl	CH2
x.028	4-nitrobenzyl	O	x.078	4-methylbenzyl	CH2
x.029	2,4-dichlorobenzyl	O	x.079	2,4-difluorobenzyl	CH2
x.030	3-fluorobenzyl	O	x.080	2,6-difluorobenzyl	CH2
x.031	4-chlorobenzyl	O	x.081	4-(cyclopropyl) benzyl	CH2
x.032	6-(trifluoromethyl)-3-pyridylmethyl	O	x.082	4-nitrobenzyl	CH2
x.033	3-(trifluoromethyl)benzyl	O	x.083	2,4-dichlorobenzyl	CH2
x.034	propyloxycarbonyl	O	x.084	3-fluorobenzyl	CH2
x.035	phenylethyl	O	x.085	4-chlorobenzyl	CH2
x.036	prop-1-enyl	O	x.086	6-(trifluoromethyl)-3-pyridylmethyl	CH2
x.037	(5-methyl-2-thienyl)	O	x.087	3-(trifluoromethyl)benzyl	CH2
x.038	propyl	O	x.088	propyloxycarbonyl	CH2
x.039	(1-methylimidazol-4-yl)	O	x.089	phenylethyl	CH2
x.040	(2,5-dichloro-3-thienyl)	O	x.090	2-(3-bromophenyl)vinyl	CH2
x.041	but-1-enyl	O	x.091	allyl	CH2
x.042	3,3,3-trifluoropropyl	O	x.092	2-thienyl	CH2
x.043	3-thienyl	O	x.093	(5-chloro-2-thienyl)	CH2
x.044	2-(3-chlorophenyl)vinyl	O	x.094	1-naphthyl	CH2
x.045	2-(3-bromophenyl)vinyl	O	x.095	2-naphthyl	CH2
x.046	allyl	O	x.096	4-ethylphenyl	CH2
x.047	2-thienyl	O	x.097	4-propylphenyl	CH2
x.048	(5-chloro-2-thienyl)	O	x.098	4-cyclopropylphenyl	CH2
x.049	1-naphthyl	O	x.099	2-fluoro-4-methylphenyl	CH2

Cpd.	Z	Y	Cpd.	Z	Y
x.050	2-naphthyl	O			

The present invention also provides a method of improving the tolerance of a plant to abiotic stress, wherein the method comprises applying to the plant, plant part, plant propagation material, or plant growing locus a composition according to the present invention.

5 The present invention also provides a method for regulating or improving the growth of a plant, wherein the method comprises applying to the plant, plant part, plant propagation material, or plant growing locus a composition according to the present invention. In one embodiment, plant growth is regulated or improved when the plant is subject to abiotic stress conditions.

10 The present invention also provides a method for enhancing the yield of a plant, wherein the method comprises applying to the plant, or plant growing locus a composition according to the present invention.

The present invention also provides a method for inhibiting seed germination of a plant, comprising applying to the seed, or a locus containing seeds, a composition according to the present invention.

15 The present invention also provides a method for safening a plant against phytotoxic effects of chemicals, comprising applying to the plant, plant part, plant propagation material, or plant growing locus a composition according to the present invention.

The composition is applied in an amount sufficient to elicit the desired response.

20 "Regulating or improving the growth of a crop" means an improvement in plant vigour, an improvement in plant quality, improved tolerance to stress factors, and/or improved input use efficiency.

An 'improvement in plant vigour' means that certain traits are improved qualitatively or quantitatively when compared with the same trait in a control plant which has been grown under the same conditions in the absence of the method of the invention. Such traits include, but are not limited to, early and/or improved germination, improved emergence, the ability to use less seeds, increased root growth, a more developed root system, increased root nodulation, increased shoot growth, increased tillering, stronger tillers, more productive tillers, increased or improved plant stand, less plant verse (lodging), an increase and/or improvement in plant height, an increase in plant weight (fresh or dry), bigger leaf blades, greener leaf colour, increased pigment content, increased photosynthetic activity, earlier flowering, longer panicles, early grain maturity, increased seed, fruit or pod size, 25 increased pod or ear number, increased seed number per pod or ear, increased seed mass, enhanced seed filling, less dead basal leaves, delay of senescence, improved vitality of the plant, increased levels of amino acids in storage tissues and/or less inputs needed (e.g. less fertiliser, water and/or labour needed). A plant with improved vigour may have an increase in any of the aforementioned traits or any combination or two or more of the aforementioned traits.

35 An 'improvement in plant quality' means that certain traits are improved qualitatively or quantitatively when compared with the same trait in a control plant which has been grown under the same conditions in the absence of the method of the invention. Such traits include, but are not limited to, improved visual appearance of the plant, reduced ethylene (reduced production and/or inhibition of

reception), improved quality of harvested material, e.g. seeds, fruits, leaves, vegetables (such improved quality may manifest as improved visual appearance of the harvested material), improved carbohydrate content (e.g. increased quantities of sugar and/or starch, improved sugar acid ratio, reduction of reducing sugars, increased rate of development of sugar), improved protein content, improved oil content and composition, improved nutritional value, reduction in anti-nutritional compounds, improved organoleptic properties (e.g. improved taste) and/or improved consumer health benefits (e.g. increased levels of vitamins and anti-oxidants)), improved post-harvest characteristics (e.g. enhanced shelf-life and/or storage stability, easier processability, easier extraction of compounds), more homogenous crop development (e.g. synchronised germination, flowering and/or fruiting of plants), and/or improved seed quality (e.g. for use in following seasons). A plant with improved quality may have an increase in any of the aforementioned traits or any combination or two or more of the aforementioned traits.

An 'improved tolerance to stress factors' means that certain traits are improved qualitatively or quantitatively when compared with the same trait in a control plant which has been grown under the same conditions in the absence of the method of the invention. Such traits include, but are not limited to, an increased tolerance and/or resistance to biotic and/or abiotic stress factors, and in particular abiotic stress factors which cause sub-optimal growing conditions such as drought (e.g. any stress which leads to a lack of water content in plants, a lack of water uptake potential or a reduction in the water supply to plants), cold exposure, heat exposure, osmotic stress, UV stress, flooding, increased salinity (e.g. in the soil), increased mineral exposure, ozone exposure, high light exposure and/or limited availability of nutrients (e.g. nitrogen and/or phosphorus nutrients). A plant with improved tolerance to stress factors may have an increase in any of the aforementioned traits or any combination or two or more of the aforementioned traits. In the case of drought and nutrient stress, such improved tolerances may be due to, for example, more efficient uptake, use or retention of water and nutrients. In particular, the compounds or compositions of the present invention are useful to improve tolerance to drought stress.

An 'improved input use efficiency' means that the plants are able to grow more effectively using given levels of inputs compared to the grown of control plants which are grown under the same conditions in the absence of the method of the invention. In particular, the inputs include, but are not limited to fertiliser (such as nitrogen, phosphorous, potassium, micronutrients), light and water. A plant with improved input use efficiency may have an improved use of any of the aforementioned inputs or any combination of two or more of the aforementioned inputs.

Other effects of regulating or improving the growth of a crop include a decrease in plant height, or reduction in tillering, which are beneficial features in crops or conditions where it is desirable to have less biomass and fewer tillers.

Any or all of the above crop enhancements may lead to an improved yield by improving e.g. plant physiology, plant growth and development and/or plant architecture. In the context of the present invention 'yield' includes, but is not limited to, (i) an increase in biomass production, grain yield, starch content, oil content and/or protein content, which may result from (a) an increase in the amount produced by the plant *per se* or (b) an improved ability to harvest plant matter, (ii) an improvement in the composition of the harvested material (e.g. improved sugar acid ratios, improved oil composition,

increased nutritional value, reduction of anti-nutritional compounds, increased consumer health benefits) and/or (iii) an increased/facilitated ability to harvest the crop, improved processability of the crop and/or better storage stability/shelf life. Increased yield of an agricultural plant means that, where it is possible to take a quantitative measurement, the yield of a product of the respective plant is increased by a measurable amount over the yield of the same product of the plant produced under the same conditions, but without application of the present invention. According to the present invention, it is preferred that the yield be increased by at least 0.5%, more preferred at least 1%, even more preferred at least 2%, still more preferred at least 4%, preferably 5% or even more.

Any or all of the above crop enhancements may also lead to an improved utilisation of land, i.e. land which was previously unavailable or sub-optimal for cultivation may become available. For example, plants which show an increased ability to survive in drought conditions, may be able to be cultivated in areas of sub-optimal rainfall, e.g. perhaps on the fringe of a desert or even the desert itself.

The compositions of the present invention generally include formulation adjuvants, such as carriers, solvents and surface-active agents (SFAs).

The composition can be in the form of concentrates which are diluted prior to use, although ready-to-use compositions can also be made. The final dilution is usually made with water, but can be made instead of, or in addition to, water, with, for example, liquid fertilisers, micronutrients, biological organisms, oil or solvents.

The compositions generally comprise from 0.1 to 99 % by weight, especially from 0.1 to 95 % by weight of the active ingredients and from 1 to 99.9 % by weight of a formulation adjuvant which preferably includes from 0 to 25 % by weight of a surface-active substance.

The compositions can be chosen from a number of formulation types, many of which are known from the Manual on Development and Use of FAO Specifications for Plant Protection Products, 5th Edition, 1999. These include dustable powders (DP), soluble powders (SP), water soluble granules (SG), water dispersible granules (WG), wettable powders (WP), granules (GR) (slow or fast release), soluble concentrates (SL), oil miscible liquids (OL), ultralow volume liquids (UL), emulsifiable concentrates (EC), dispersible concentrates (DC), emulsions (both oil in water (EW) and water in oil (EO)), micro-emulsions (ME), suspension concentrates (SC), aerosols, capsule suspensions (CS) and seed treatment formulations. The formulation type chosen in any instance will depend upon the particular purpose envisaged and the physical, chemical and biological properties of the compound of the present invention.

Dustable powders (DP) may be prepared by mixing the active ingredients of the composition with one or more solid diluents (for example natural clays, kaolin, pyrophyllite, bentonite, alumina, montmorillonite, kieselguhr, chalk, diatomaceous earths, calcium phosphates, calcium and magnesium carbonates, sulphur, lime, flours, talc and other organic and inorganic solid carriers) and mechanically grinding the mixture to a fine powder.

Soluble powders (SP) may be prepared by mixing the active ingredients with one or more water-soluble inorganic salts (such as sodium bicarbonate, sodium carbonate or magnesium sulphate) or one or more water-soluble organic solids (such as a polysaccharide) and, optionally, one or more wetting agents, one or more dispersing agents or a mixture of said agents to improve water

dispersibility/solubility. The mixture is then ground to a fine powder. Similar compositions may also be granulated to form water soluble granules (SG).

Wettable powders (WP) may be prepared by mixing the active ingredients with one or more solid diluents or carriers, one or more wetting agents and, preferably, one or more dispersing agents and, optionally, one or more suspending agents to facilitate the dispersion in liquids. The mixture is then ground to a fine powder. Similar compositions may also be granulated to form water dispersible granules (WG).

Granules (GR) may be formed either by granulating a mixture of the active ingredients of the composition and one or more powdered solid diluents or carriers, or from pre-formed blank granules by absorbing the active ingredients (or a solution thereof, in a suitable agent) in a porous granular material (such as pumice, attapulgite clays, fuller's earth, kieselguhr, diatomaceous earths or ground corn cobs) or by adsorbing the active ingredients (or a solution thereof, in a suitable agent) on to a hard core material (such as sands, silicates, mineral carbonates, sulphates or phosphates) and drying if necessary. Agents which are commonly used to aid absorption or adsorption include solvents (such as aliphatic and aromatic petroleum solvents, alcohols, ethers, ketones and esters) and sticking agents (such as polyvinyl acetates, polyvinyl alcohols, dextrans, sugars and vegetable oils). One or more other additives may also be included in granules (for example an emulsifying agent, wetting agent or dispersing agent).

Dispersible Concentrates (DC) may be prepared by dissolving the active ingredients in water or an organic solvent, such as a ketone, alcohol or glycol ether. These solutions may contain a surface active agent (for example to improve water dilution or prevent crystallisation in a spray tank).

Emulsifiable concentrates (EC) or oil-in-water emulsions (EW) may be prepared by dissolving the active ingredients in an organic solvent (optionally containing one or more wetting agents, one or more emulsifying agents or a mixture of said agents). Suitable organic solvents for use in ECs include aromatic hydrocarbons (such as alkylbenzenes or alkylnaphthalenes, exemplified by SOLVESSO 100, SOLVESSO 150 and SOLVESSO 200; SOLVESSO is a Registered Trade Mark), ketones (such as cyclohexanone or methylcyclohexanone) and alcohols (such as benzyl alcohol, furfuryl alcohol or butanol), N-alkylpyrrolidones (such as N-methylpyrrolidone or N-octylpyrrolidone), dimethyl amides of fatty acids (such as C₈-C₁₀ fatty acid dimethylamide) and chlorinated hydrocarbons. An EC product may spontaneously emulsify on addition to water, to produce an emulsion with sufficient stability to allow spray application through appropriate equipment.

Preparation of an EW involves obtaining the active ingredients either as a liquid (if not a liquid at room temperature, they may be melted at a reasonable temperature, typically below 70°C) or in solution (by dissolving in an appropriate solvent) and then emulsifying the resultant liquid or solution into water containing one or more SFAs, under high shear, to produce an emulsion. Suitable solvents for use in EWs include vegetable oils, chlorinated hydrocarbons (such as chlorobenzenes), aromatic solvents (such as alkylbenzenes or alkylnaphthalenes) and other appropriate organic solvents which have a low solubility in water.

Microemulsions (ME) may be prepared by mixing water with a blend of one or more solvents with one or more SFAs, to produce spontaneously a thermodynamically stable isotropic liquid

formulation. The active ingredients are present initially in either the water or the solvent/SFA blend. Suitable solvents for use in MEs include those hereinbefore described for use in ECs or in EWs. An ME may be either an oil-in-water or a water-in-oil system (which system is present may be determined by conductivity measurements) and may be suitable for mixing water-soluble and oil-soluble pesticides in the same formulation. An ME is suitable for dilution into water, either remaining as a microemulsion or forming a conventional oil-in-water emulsion.

Suspension concentrates (SC) may comprise aqueous or non-aqueous suspensions of finely divided insoluble solid particles of the active ingredients. SCs may be prepared by ball or bead milling the ingredients in a suitable medium, optionally with one or more dispersing agents, to produce a fine particle suspension. One or more wetting agents may be included in the composition and a suspending agent may be included to reduce the rate at which the particles settle. Alternatively, the active ingredients of the composition may be dry milled and added to water, containing agents hereinbefore described, to produce the desired end product.

Aerosol formulations comprise the active ingredients and a suitable propellant (for example *n*-butane). The active ingredients may also be dissolved or dispersed in a suitable medium (for example water or a water miscible liquid, such as *n*-propanol) to provide compositions for use in non-pressurised, hand-actuated spray pumps.

Capsule suspensions (CS) may be prepared in a manner similar to the preparation of EW formulations but with an additional polymerisation stage such that an aqueous dispersion of oil droplets is obtained, in which each oil droplet is encapsulated by a polymeric shell and contains the active ingredients and, optionally, a carrier or diluent therefor. The polymeric shell may be produced by either an interfacial polycondensation reaction or by a coacervation procedure. The compositions may provide for controlled release of the active ingredients and they may be used for seed treatment. The compositions of the present invention may also be formulated in a biodegradable polymeric matrix to provide a slow, controlled release of the active ingredients.

The composition may include one or more additives to improve the biological performance of the composition, for example by improving wetting, retention or distribution on surfaces; resistance to rain on treated surfaces; or uptake or mobility of a compound of the present invention. Such additives include surface active agents (SFAs), spray additives based on oils, for example certain mineral oils or natural plant oils (such as soy bean and rape seed oil), and blends of these with other bio-enhancing adjuvants (ingredients which may aid or modify the action of a compound of the present invention). Wetting agents, dispersing agents and emulsifying agents may be SFAs of the cationic, anionic, amphoteric or non-ionic type.

Suitable SFAs of the cationic type include quaternary ammonium compounds (for example cetyltrimethyl ammonium bromide), imidazolines and amine salts.

Suitable anionic SFAs include alkali metals salts of fatty acids, salts of aliphatic monoesters of sulphuric acid (for example sodium lauryl sulphate), salts of sulphonated aromatic compounds (for example sodium dodecylbenzenesulphonate, calcium dodecylbenzenesulphonate, butylnaphthalene sulphonate and mixtures of sodium di-*isopropyl*- and tri-*isopropyl*-naphthalene sulphonates), ether sulphates, alcohol ether sulphates (for example sodium laureth-3-sulphate), ether carboxylates (for

example sodium laureth-3-carboxylate), phosphate esters (products from the reaction between one or more fatty alcohols and phosphoric acid (predominately mono-esters) or phosphorus pentoxide (predominately di-esters), for example the reaction between lauryl alcohol and tetraphosphoric acid; additionally these products may be ethoxylated), sulphasuccinamates, paraffin or olefine sulphonates, taurates and lignosulphonates.

Suitable SFAs of the amphoteric type include betaines, propionates and glycines.

Suitable SFAs of the non-ionic type include condensation products of alkylene oxides, such as ethylene oxide, propylene oxide, butylene oxide or mixtures thereof, with fatty alcohols (such as oleyl alcohol or cetyl alcohol) or with alkylphenols (such as octylphenol, nonylphenol or octylcresol); partial esters derived from long chain fatty acids or hexitol anhydrides; condensation products of said partial esters with ethylene oxide; block polymers (comprising ethylene oxide and propylene oxide); alkanolamides; simple esters (for example fatty acid polyethylene glycol esters); amine oxides (for example lauryl dimethyl amine oxide); and lecithins.

Suitable suspending agents include hydrophilic colloids (such as polysaccharides, polyvinylpyrrolidone or sodium carboxymethylcellulose) and swelling clays (such as bentonite or attapulgate).

The composition of the present invention may be applied to a plant, part of the plant, plant organ, plant propagation material or a plant growing locus.

The term "plants" refers to all physical parts of a plant, including seeds, seedlings, saplings, roots, tubers, stems, stalks, foliage, and fruits.

The term "locus" as used herein means fields in or on which plants are growing, or where seeds of cultivated plants are sown, or where seed will be placed into the soil. It includes soil, seeds, and seedlings, as well as established vegetation.

The term "plant propagation material" denotes all generative parts of a plant, for example seeds or vegetative parts of plants such as cuttings and tubers. It includes seeds in the strict sense, as well as roots, fruits, tubers, bulbs, rhizomes, and parts of plants.

The application is generally made by spraying the composition, typically by tractor mounted sprayer for large areas, but other methods such as dusting (for powders), drip or drench can also be used. Alternatively the composition may be applied in furrow or directly to a seed before or at the time of planting.

The composition may be applied pre-emergence or post-emergence. When the composition is used to regulate the growth of crop plants or enhance the tolerance to abiotic stress, it may be applied post-emergence of the crop. Where the composition is used to inhibit or delay the germination of seeds, it may be applied pre-emergence.

The present invention envisages application of the composition to plant propagation material prior to, during, or after planting, or any combination of these.

Although active ingredients can be applied to plant propagation material in any physiological state, a common approach is to use seeds in a sufficiently durable state to incur no damage during the treatment process. Typically, seed would have been harvested from the field; removed from the plant; and separated from any cob, stalk, outer husk, and surrounding pulp or other non-seed plant material.

Seed would preferably also be biologically stable to the extent that treatment would not cause biological damage to the seed. It is believed that treatment can be applied to seed at any time between seed harvest and sowing of seed including during the sowing process.

Methods for applying or treating active ingredients on to plant propagation material or to the locus of planting are known in the art and include dressing, coating, pelleting and soaking as well as nursery tray application, in furrow application, soil drenching, soil injection, drip irrigation, application through sprinklers or central pivot, or incorporation into soil (broad cast or in band). Alternatively or in addition active ingredients may be applied on a suitable substrate sown together with the plant propagation material.

The rates of application of compositions may vary within wide limits and depend on the nature of the soil, the method of application (pre- or post-emergence; seed dressing; application to the seed furrow; no tillage application etc.), the crop plant, the prevailing climatic conditions, and other factors governed by the method of application, the time of application and the target crop. For foliar or drench application, the compositions are generally applied at a rate of from 1 to 2000 g/ha, especially from 5 to 1000 g/ha. For seed treatment the rate of application is generally between 0.0005 and 150g per 100kg of seed.

The compositions may be applied to dicotyledonous or monocotyledonous crops. Crops of useful plants in which the composition according to the invention can be used include perennial and annual crops, such as berry plants for example blackberries, blueberries, cranberries, raspberries and strawberries; cereals for example barley, maize (corn), millet, oats, rice, rye, sorghum tritcale and wheat; fibre plants for example cotton, flax, hemp, jute and sisal; field crops for example sugar and fodder beet, coffee, hops, mustard, oilseed rape (canola), poppy, sugar cane, sunflower, tea and tobacco; fruit trees for example apple, apricot, avocado, banana, cherry, citrus, nectarine, peach, pear and plum; grasses for example Bermuda grass, bluegrass, bentgrass, centipede grass, fescue, ryegrass, St. Augustine grass and Zoysia grass; herbs such as basil, borage, chives, coriander, lavender, lovage, mint, oregano, parsley, rosemary, sage and thyme; legumes for example beans, lentils, peas and soya beans; nuts for example almond, cashew, ground nut, hazelnut, peanut, pecan, pistachio and walnut; palms for example oil palm; ornamentals for example flowers, shrubs and trees; other trees, for example cacao, coconut, olive and rubber; vegetables for example asparagus, aubergine, broccoli, cabbage, carrot, cucumber, garlic, lettuce, marrow, melon, okra, onion, pepper, potato, pumpkin, rhubarb, spinach and tomato; and vines for example grapes.

Particularly preferred crops are soy, wheat and corn.

Crops are to be understood as being those which are naturally occurring, obtained by conventional methods of breeding, or obtained by genetic engineering. They include crops which contain so-called output traits (e.g. improved storage stability, higher nutritional value and improved flavour).

Crops are to be understood as also including those crops which have been rendered tolerant to herbicides like bromoxynil or classes of herbicides such as ALS-, EPSPS-, GS-, HPPD-

and PPO-inhibitors. An example of a crop that has been rendered tolerant to imidazolinones, e.g. imazamox, by conventional methods of breeding is Clearfield® summer canola. Examples of crops that have been rendered tolerant to herbicides by genetic engineering methods include e.g. glyphosate- and glufosinate-resistant maize varieties commercially available under the trade names RoundupReady®, Herculex I® and LibertyLink®.

Crops are also to be understood as being those which naturally are or have been rendered resistant to harmful insects. This includes plants transformed by the use of recombinant DNA techniques, for example, to be capable of synthesising one or more selectively acting toxins, such as are known, for example, from toxin-producing bacteria. Examples of toxins which can be expressed include δ -endotoxins, vegetative insecticidal proteins (Vip), insecticidal proteins of bacteria colonising nematodes, and toxins produced by scorpions, arachnids, wasps and fungi.

An example of a crop that has been modified to express the *Bacillus thuringiensis* toxin is the Bt maize KnockOut® (Syngenta Seeds). An example of a crop comprising more than one gene that codes for insecticidal resistance and thus expresses more than one toxin is VipCot® (Syngenta Seeds). Crops or seed material thereof can also be resistant to multiple types of pests (so-called stacked transgenic events when created by genetic modification). For example, a plant can have the ability to express an insecticidal protein while at the same time being herbicide tolerant, for example Herculex I® (Dow AgroSciences, Pioneer Hi-Bred International).

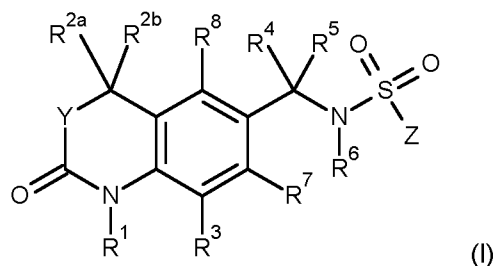
Compounds of the present invention may also be used to inhibit or delay the germination of seeds of non-crop plants, for example as part of an integrated weed control program. A delay in germination of weed seeds may provide a crop seedling with a stronger start by reducing competition with weeds. Alternatively compounds of the present invention may be used to delay the germination of seeds of crop plants, for example to increase the flexibility of timing of planting for the grower.

The invention also includes a method of controlling plant pests, in particular insects and fungi, comprising applying to a plant, plant part, plant propagation material, or plant growing locus a composition according to the invention.

The ABA agonists present in the compositions may be made by the methods described in WO2016/128317 and WO2018/007217, the contents of which are incorporated herein in their entirety.

CLAIMS

1. A composition comprising a mixture of components (A) and (B) as active ingredients,
 5 wherein component (A) is a compound of formula (I)



wherein:

- R^1 is selected from the group consisting of C₁-C₇ alkyl, C₁-C₇ haloalkyl, C₃-C₅ cycloalkyl-C₁-C₇ alkyl, C₃-C₇ alkenyl, C₃-C₇ alkynyl, aryl-C₁-C₇ alkyl, (3-6 membered heterocyclyl)-C₁-C₇ alkyl, phenyl, C₃-C₅ cycloalkyl and a 4-6 membered heterocyclyl, each optionally substituted with one to three R_x ;

R^{2a} and R^{2b} are independently selected from the group consisting of hydrogen, C₁-C₄ alkyl and C₁-C₄ haloalkyl; or R^{2a} and R^{2b} , together with the atom to which they are attached, are joined to form a C₃-C₆ cycloalkyl;

- R^3 , R^7 and R^8 are independently selected from the group consisting of hydrogen, halogen, cyano, C₁-C₄ alkyl, C₂-C₄ alkenyl, C₂-C₄ alkynyl, C₁-C₄ alkoxy, C₁-C₄ haloalkyl, C₁-C₄ haloalkoxy and C₃-C₄ cycloalkyl;

R^4 and R^5 are independently selected from the group consisting of hydrogen, C₁-C₄ alkyl, C₁-C₄ haloalkyl and C₃-C₄ cycloalkyl;

- or R^4 and R^5 together with the atom to which they are attached, are joined to form a C₃-C₄ cycloalkyl or C₄ heterocyclyl;

R^6 is selected from the group consisting of hydrogen, C₁-C₄ alkyl, C₃-C₄ alkenyl, C₃-C₄ alkynyl, and C₁-C₃ alkoxy-C₁-C₄-alkyl;

Z is selected from the group consisting of, C₁-C₇ alkyl, C₃-C₅ cycloalkyl, 3-10 membered heterocyclyl and aryl, each optionally substituted with one to three R_y ;

- Y is selected from the group consisting of O and CR_w;

R_w is selected from the group consisting of hydrogen, C₁-C₄ alkyl, C₁-C₄ alkoxy, C₁-C₄ haloalkyl, each R_x is, independently of the other, selected from the group consisting of halogen, cyano, C₁-C₄ alkyl, C₁-C₄ haloalkyl, C₁-C₄ alkoxy, C₁-C₄ haloalkoxy, C₁-C₄ alkylcarbonyl, C₁-C₄ alkoxy carbonyl, carboxylic acid, aminocarbonyl, C₁-C₄ aminocarbonyl and C₃-C₄ cycloalkyl;

- each R_y is, independently of the other, selected from the group consisting of halogen, cyano, nitro, C₁-C₄ alkyl, C₁-C₄ alkoxy, C₁-C₄ haloalkyl, C₁-C₄ haloalkoxy, C₁-C₄ alkylsulfanyl, C₁-C₄ haloalkylsulfanyl, C₁-C₄ alkylsulfinyl, C₁-C₄ haloalkylsulfinyl, C₁-C₄ alkylsulfonyl, C₁-C₄ haloalkylsulfonyl, C₁-C₄ alkylcarbonyl, C₁-C₄ alkoxy carbonyl, carboxylic acid, aminocarbonyl, C₁-C₄ aminocarbonyl and C₃-C₄ cycloalkyl which cycloalkyl is unsubstituted or substituted by one or more R_z ;

each R_z is, independently of the other, selected from the group consisting of halogen, C_1 - C_4 -alkyl and C_1 - C_4 -haloalkyl;

wherein Z is not butyl when either R^4 or R^5 is methyl;

and wherein R^1 is not methyl when R^{2a} , R^{2b} , R^3 , R^4 , R^5 , R^6 , R^7 and R^8 are each hydrogen; or
5 salts or N-oxides thereof;

and component B is least one additional active ingredient selected from the group consisting of fungicides/bactericides, insecticides/acaricides and additional plant growth regulators.

2. A composition according to claim 2, wherein, in the compound of formula (I), R^1 is
10 selected from the group consisting of C_1 - C_6 alkyl, C_1 - C_6 haloalkyl, C_3 - C_6 alkenyl and C_3 - C_5 cyclopropyl- C_1 - C_6 -alkyl, each optionally substituted with one to three R_x .

3. A composition according to any preceding claim, wherein, in the compound of formula
15 (I) R^1 is ethyl or propyl, Z is selected from the group consisting of C_1 - C_7 alkyl, phenyl and 3-6 membered heteroaryl, each optionally substituted with one to three R_y .

4. A composition according to any preceding claim, wherein, in the compound of formula
20 (I) Z is phenyl optionally substituted with one to three substituents independently selected from the group consisting of halogen, C_1 - C_4 haloalkyl, C_1 - C_4 alkyl and C_1 - C_4 haloalkoxy.

5. A composition according to any of the preceding claims, wherein, in the compound of
formula (I) Y is O.

6. A composition according to any of the preceding claims, wherein, in the compound of
25 formula (I) Y is CH_2 .

7. A composition according to any of the preceding claims, wherein, in the compound of
formula (I) R^{2a} and R^{2b} are independently selected from the group consisting of hydrogen and C_1 - C_4
alkyl and R^3 is selected from the group consisting of hydrogen, halogen and C_1 - C_4 alkyl.
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8. A composition according to any of the preceding claims, wherein, in the compound of
formula (I) R^{2a} is methyl, and R^{2b} , R^3 , R^4 , R^5 , R^6 , R^7 and R^8 are hydrogen.

9. A composition according to any one of claims 1-7, wherein, in the compound of
35 formula (I) R^{2a} is methyl, R^3 is fluorine and R^{2b} , R^4 , R^5 , R^6 , R^7 and R^8 are hydrogen.

10. A composition according to any preceding claim, wherein component (A) is a
compound selected from the group consisting of: N-[(1-ethyl-4-methyl-2-oxo-4H-3,1-benzoxazin-6-
yl)methyl]-benzenesulfonamide, ethyl-4-methyl-2-oxo-4H-3,1-benzoxazin-6-yl)methyl]-2,4-difluoro-
40 benzenesulfonamide, 4-methyl-N-[(4-methyl-2-oxo-1-propyl-4H-3,1-benzoxazin-6-
yl)methyl]benzenesulfonamide, N-[(4-methyl-2-oxo-1-propyl-4H-3,1-benzoxazin-6-yl)methyl]-2,4-
difluoro-benzenesulfonamide, N-[(4-methyl-2-oxo-1-propyl-4H-3,1-benzoxazin-6-yl)methyl]-

benzenesulfonamide, *N*-[[8-fluoro-1-(3-fluoropropyl)-4-methyl-2-oxo-4*H*-3,1-benzoxazin-6-yl]methyl]benzenesulfonamide, *N*-[[8-fluoro-1-(2-methoxyethyl)-4-methyl-2-oxo-4*H*-3,1-benzoxazin-6-yl]methyl]benzenesulfonamide, 5-chloro-*N*-[[1-(2-methoxyethyl)-4-methyl-2-oxo-4*H*-3,1-benzoxazin-6-yl]methyl]thiophene-2-sulfonamide, 5-chloro-*N*-[[1-(2,2-difluoroethyl)-4-methyl-2-oxo-4*H*-3,1-benzoxazin-6-yl]methyl]thiophene-2-sulfonamide, 5-chloro-*N*-[[4-methyl-2-oxo-1-(2,2,2-trifluoroethyl)-4*H*-3,1-benzoxazin-6-yl]methyl]thiophene-2-sulfonamide, 5-chloro-*N*-[[1-(cyclopropylmethyl)-4-methyl-2-oxo-4*H*-3,1-benzoxazin-6-yl]methyl]thiophene-2-sulfonamide, *N*-[[1-(2,2-difluoroethyl)-4-methyl-2-oxo-4*H*-3,1-benzoxazin-6-yl]methyl]-4-fluoro-benzenesulfonamide, 4-fluoro-*N*-[[4-methyl-2-oxo-1-(2,2,2-trifluoroethyl)-4*H*-3,1-benzoxazin-6-yl]methyl]benzenesulfonamide, 4-fluoro-*N*-[[1-(2-methoxyethyl)-4-methyl-2-oxo-4*H*-3,1-benzoxazin-6-yl]methyl]benzenesulfonamide, *N*-[[1-(2,2-difluoroethyl)-4-methyl-2-oxo-4*H*-3,1-benzoxazin-6-yl]methyl]benzenesulfonamide, *N*-[[1-(3-fluoropropyl)-4-methyl-2-oxo-4*H*-3,1-benzoxazin-6-yl]methyl]benzenesulfonamide, *N*-[[1-(cyclopropylmethyl)-4-methyl-2-oxo-4*H*-3,1-benzoxazin-6-yl]methyl]benzenesulfonamide, *N*-[[4-methyl-2-oxo-1-(2,2,2-trifluoroethyl)-4*H*-3,1-benzoxazin-6-yl]methyl]benzenesulfonamide, *N*-[[1-(2-methoxyethyl)-4-methyl-2-oxo-4*H*-3,1-benzoxazin-6-yl]methyl]benzenesulfonamide, *N*-[(1-ethyl-8-fluoro-4-methyl-2-oxo-4*H*-3,1-benzoxazin-6-yl)methyl]benzenesulfonamide, *N*-[(8-fluoro-4-methyl-2-oxo-1-propyl-4*H*-3,1-benzoxazin-6-yl)methyl]benzenesulfonamide, 5-chloro-*N*-[(4-methyl-2-oxo-1-propyl-4*H*-3,1-benzoxazin-6-yl)methyl]thiophene-2-sulfonamide, 5-chloro-*N*-[(1-ethyl-4-methyl-2-oxo-4*H*-3,1-benzoxazin-6-yl)methyl]thiophene-2-sulfonamide, *N*-[(2-oxo-1-propyl-4*H*-3,1-benzoxazin-6-yl)methyl]benzenesulfonamide, *N*-[(8-fluoro-4-methyl-2-oxo-1-propyl-4*H*-3,1-benzoxazin-6-yl)methyl]benzenesulfonamide, and 5-chloro-*N*-[[1-(2-methoxyethyl)-4-methyl-2-oxo-4*H*-3,1-benzoxazin-6-yl]methyl]thiophene-2-sulfonamide, *N*-[[4-methyl-2-oxo-1-(2,2,2-trifluoroethyl)-3,4-dihydroquinolin-6-yl]methyl]benzenesulfonamide, 4-difluoro-*N*-[[4-methyl-2-oxo-1-(2,2,2-trifluoroethyl)-3,4-dihydroquinolin-6-yl]methyl]benzenesulfonamide, *N*-[(1-ethyl-4-methyl-2-oxo-3,4-dihydroquinolin-6-yl)methyl]-2,4-difluoro-benzenesulfonamide, *N*-[(1-ethyl-4-methyl-2-oxo-3,4-dihydroquinolin-6-yl)methyl]benzenesulfonamide, *N*-[(2-oxo-1-propyl-3,4-dihydroquinolin-6-yl)methyl]benzenesulfonamide, 2,4-difluoro-*N*-[(2-oxo-1-propyl-3,4-dihydroquinolin-6-yl)methyl]benzenesulfonamide, 2,6-difluoro-*N*-[(2-oxo-1-propyl-3,4-dihydroquinolin-6-yl)methyl]benzenesulfonamide, 4-fluoro-*N*-[(2-oxo-1-propyl-3,4-dihydroquinolin-6-yl)methyl]benzenesulfonamide, *N*-[[1-(cyclopropylmethyl)-4-methyl-2-oxo-3,4-dihydroquinolin-6-yl]methyl]benzenesulfonamide, *N*-[[1-(cyclopropylmethyl)-4-methyl-2-oxo-3,4-dihydroquinolin-6-yl]methyl]-2,4-difluoro-benzenesulfonamide, *N*-[(1-ethyl-8-fluoro-4-methyl-2-oxo-3,4-dihydroquinolin-6-yl)methyl]benzenesulfonamide, and *N*-[(8-fluoro-2-oxo-1-propyl-3,4-dihydroquinolin-6-yl)methyl]benzenesulfonamide.

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11. A composition according to any preceding claim, wherein component (B) is selected from the group consisting of petroleum oils, 1,1-bis(4-chlorophenyl)-2-ethoxyethanol, 2,4-dichlorophenyl benzenesulfonate, 2-fluoro-*N*-methyl-*N*-1-naphthylacide, 4-chlorophenyl phenyl sulfone, abamectin, acequinocyl, acetoprole, acrinathrin, aldicarb, aldoxycarb, alpha-cypermethrin, amidithion, amidoflumet, amidothioate, amiton, amiton hydrogen oxalate, amitraz, aramite, arsenous oxide,

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azinphos-ethyl, azinphos-methyl, azobenzene, azocyclotin, azothoate, benomyl, benoxafos, benzoximate, benzyl benzoate, bifenazate, bifenthrin, binapacryl, bixafen, brofenvalerate, bromocyclen, bromophos, bromophos-ethyl, bromopropylate, buprofezin, butocarboxim, butoxycarboxim, butylpyridaben, calcium polysulfide, camphechlor, carbanolate, carbaryl, carbofuran, carbophenothion,

5 cymiazole, chinomethionat, chlorbenside, chlordimeform, chlordimeform hydrochloride, chlorfenapyr, chlorfenethol, chlorfenson, chlorfensulfide, chlorfenvinphos, chlorobenzilate, chloromebuform, chloromethiuron, chloropropylate, chlorpyrifos, chlorpyrifos-methyl, chlorthiophos, cinerin I, cinerin II, cinerins, clofentezine, closantel, coumaphos, crotamiton, crotoxyphos, cufraneb, cyanthoate, cyflumetofen, cyhalothrin, cyhexatin, cypermethrin, DCPM, DDT, demephion, demephion-O,

10 demephion-S, demeton, demeton-methyl, demeton-O, demeton-O-methyl, demeton-S, demeton-S-methyl, demeton-S-methylsulfon, diafenthiuron, dialifos, diazinon, dichlofluanid, dichlorvos, dicliphos, dicofol, dicrotophos, dienochlor, dimefox, dimethoate, dinactin, dinex, dinex-diclexine, dinobuton, dinocap, dinocap-4, dinocap-6, dinocton, dinopenton, dinosulfon, dinoterbon, dioxathion, diphenyl sulfone, disulfiram, disulfoton, DNOC, dofenapyn, doramectin, endosulfan, endothion, EPN,

15 eprinomectin, ethion, ethoate-methyl, etoxazole, etrimfos, fenazaflor, fenazaquin, fenbutatin oxide, fenothiocarb, fenpropathrin, fenpyrad, fenpyroximate, fenpyrazamine, fenson, fentrifanil, fenvalerate, fipronil, fluacrypyrim, fluazuron, flubenzimine, flucycloxuron, flucythrinate, fluenetil, flufenoxuron, flumethrin, fluorbenside, fluvalinate, FMC 1137, formetanate, formetanate hydrochloride, formothion, formparanate, gamma-HCH, glyodin, halfenprox, heptenophos, hexadecyl cyclopropanecarboxylate,

20 hexythiazox, iodomethane, isocarbophos, jasmolin I, jasmolin II, jodfenphos, lindane, lufenuron, malathion, malonoben, mecarbam, mephosfolan, mesulfen, methacrifos, methamidophos, methidathion, methiocarb, methomyl, methyl bromide, metolcarb, mevinphos, mexacarbate, milbemectin, milbemycin oxime, mipafox, monocrotophos, morphothion, moxidectin, naled, 4-chloro-2-(2-chloro-2-methyl-propyl)-5-[(6-iodo-3-pyridyl)methoxy]pyridazin-3-one, nifluridide, nikkomycins,

25 nitrilacarb, nitrilacarb 1:1 zinc chloride complex, oxamyl, oxydeprofos, oxydisulfoton, pp'-DDT, parathion, permethrin, phenkapton, phenthoate, phorate, phosalone, phosfolan, phosmet, phosphamidon, phoxim, pirimiphos-methyl, polychloroterpenes, polynactins, proclonol, profenofos, promacyl, propargite, propetamphos, propoxur, prothidathion, prothoate, pyrethrin I, pyrethrin II, pyrethrins, pyridaben, pyridaphenthion, pyrimidifen, pyrimitate, quinalphos, quintiofos, R-1492,

30 phosglycin, rotenone, schradan, sebufos, selamectin, sophamide, spiroadiclofen, spiromesifen, SSI-121, sulfiram, sulfluramid, sulfotep, sulfur, diflovidazin, tau-fluvalinate, tebufenpyrad, TEPP, terbam, tetrachlorvinphos, tetradifon, tetranactin, tetrasul, thiafenox, thiocarboxime, thiofanox, thiometon, thioquinox, thuringiensin, triamiphos, triarathene, triazophos, triazuron, trichlorfon, trifenofos, trinactin,

35 vamidothion, vaniliprole, bethoxazin, copper dioctanoate, copper sulfate, cybutryne, dichlone, dichlorophen, endothal, fentin, hydrated lime, nabam, quinoclamine, quinonamid, simazine, triphenyltin acetate, triphenyltin hydroxide, cruformate, emamectin, emamectin benzoate, piperazine, spinosad, thiophanate, chloralose, endrin, fenthion, pyridin-4-amine, 1-hydroxy-1H-pyridine-2-thione, 4-(quinoxalin-2-ylamino)benzenesulfonamide, 8-hydroxyquinoline sulfate, bronopol, copper hydroxide, cresol, dipyrithione, dodicin, fenaminosulf, formaldehyde, hydrargaphen, kasugamycin, kasugamycin

40 hydrochloride hydrate, nickel bis(dimethyldithiocarbamate), nitrapyrin, octhilionone, oxolinic acid,

oxytetracycline, potassium hydroxyquinoline sulfate, probenazole, streptomycin, streptomycin sesquisulfate, tecloftalam, thiomersal, Adoxophyes orana GV, Agrobacterium radiobacter, Amblyseius spp., Anagrapta falcifera NPV, Anagrus atomus, Aphelinus abdominalis, Aphidius colemani, Aphidoletes aphidimyza, Autographa californica NPV, Bacillus firmus, Bacillus sphaericus Neide, 5 Bacillus thuringiensis Berliner, Bacillus thuringiensis subsp. aizawai, Bacillus thuringiensis subsp. israelensis, Bacillus thuringiensis subsp. japonensis, Bacillus thuringiensis subsp. kurstaki, Bacillus thuringiensis subsp. tenebrionis, Beauveria bassiana, Beauveria brongniartii, Chrysoperla carnea, Cryptolaemus montrouzieri, Cydia pomonella GV, Dacnusa sibirica, Diglyphus isaea, Encarsia formosa, Eretmocerus eremicus, Helicoverpa zea NPV, Heterorhabditis bacteriophora and H. megidis, 10 Hippodamia convergens, Leptomastix dactylopii, Macrolophus caliginosus, Mamestra brassicae NPV, Metaphycus helvolus, Metarhizium anisopliae var. acridum, Metarhizium anisopliae var. anisopliae, Neodiprion sertifer NPV and N. lecontei NPV, Orius spp., Paecilomyces fumosoroseus, Phytoseiulus persimilis, Spodoptera exigua multicapsid nuclear polyhedrosis virus, Steinernema bibionis, Steinernema carpocapsae, Steinernema feltiae, Steinernema glaseri, Steinernema riobrave, 15 Steinernema riobravus, Steinernema scapterisci, Steinernema spp., Trichogramma spp., Typhlodromus occidentalis, Verticillium lecanii, apholate, bisazir, busulfan, diflubenzuron, dimatif, hemel, hempa, metepa, methiotepa, methyl apholate, morzid, penfluron, tepa, thiohempa, thiotepa, tretamine, uredepa, (E)-dec-5-en-1-yl acetate with (E)-dec-5-en-1-ol, (E)-tridec-4-en-1-yl acetate, (E)-6-methylhept-2-en-4-ol, (E,Z)-tetradeca-4,10-dien-1-yl acetate, (Z)-dodec-7-en-1-yl acetate, (Z)-hexadec-11-enal, (Z)- 20 hexadec-11-en-1-yl acetate, (Z)-hexadec-13-en-11-yn-1-yl acetate, (Z)-icos-13-en-10-one, (Z)-tetradec-7-en-1-yl acetate, (Z)-tetradec-9-en-1-yl acetate, (7E,9Z)-dodeca-7,9-dien-1-yl acetate, (9Z,11E)-tetradeca-9,11-dien-1-yl acetate, (9Z,12E)-tetradeca-9,12-dien-1-yl acetate, 14-methyloctadec-1-ene, 4-methylnonan-5-ol with 4-methylnonan-5-one, alpha-multistriatin, brevicomin, codlure, codlemone, cuelure, disparlure, dodec-8-en-1-yl acetate, dodec-9-en-1-yl acetate, dodeca- 25 8, 10-dien-1-yl acetate, dominicalure, ethyl 4-methyloctanoate, eugenol, frontalinal, gossypure, grandlure, grandlure I, grandlure II, grandlure III, grandlure IV, hexalure, ipsdienol, ipsenol, japonilure, lineatin, litlure, looplure, medlure, megatomoic acid, methyl eugenol, muscalure, octadeca-2,13-dien-1-yl acetate, octadeca-3,13-dien-1-yl acetate, orfuralure, oryctalure, ostramone, siglure, sordidin, sulcatol, tetradec-11-en-1-yl acetate, trimedlure, trimedlure A, trimedlure B₁, trimedlure B₂, trimedlure C, trunc- 30 call, 2-(octylthio)ethanol, butopyronoxyl, butoxy(polypropylene glycol), dibutyl adipate, dibutyl phthalate, dibutyl succinate, diethyltoluamide, dimethyl carbate, dimethyl phthalate, ethyl hexanediol, hexamide, methoquin-butyl, methylneodecanamide, oxamate, picaridin, 1-dichloro-1-nitroethane, 1,1-dichloro-2,2-bis(4-ethylphenyl)ethane, 1,2-dichloropropane, 1,2-dichloropropane with 1,3-dichloropropene, 1-bromo-2-chloroethane, 2,2,2-trichloro-1-(3,4-dichlorophenyl)ethyl acetate, 2,2-dichlorovinyl 2-ethylsulfinyloxyethyl methyl phosphate, 2-(1,3-dithiolan-2-yl)phenyl dimethylcarbamate, 2-(2-butoxyethoxy)ethyl thiocyanate, 2-(4,5-dimethyl-1,3-dioxolan-2-yl)phenyl methylcarbamate, 2-(4-chloro-3,5-xilyloxy)ethanol, 2-chlorovinyl diethyl phosphate, 2-imidazolidone, 2-isovalerylindan-1,3-dione, 2-methyl(prop-2-ynyl)aminophenyl methylcarbamate, 2-thiocyanatoethyl laurate, 3-bromo-1-chloroprop-1-ene, 3-methyl-1-phenylpyrazol-5-yl dimethylcarbamate, 4-methyl(prop-2-ynyl)amino-3,5- 40 xilyl methylcarbamate, 5,5-dimethyl-3-oxocyclohex-1-enyl dimethylcarbamate, acephate, acetamiprid,

acethion, acrylonitrile, alanycarb, aldrin, allethrin, allosamidin, allyxycarb, alpha-ecdysone, aluminium phosphide, aminocarb, anabasine, athidathion, azadirachtin, azamethiphos, *Bacillus thuringiensis* delta endotoxins, barium hexafluorosilicate, barium polysulfide, barthrin, Bayer 22/190, Bayer 22408, bendiocarb, benfuracarb, bensultap, beta-cyfluthrin, beta-cypermethrin, bioallethrin, bioallethrin S-cyclopentenyl isomer, bioethanomethrin, biopermethrin, bioresmethrin, bis(2-chloroethyl) ether, bistrifluron, borax, bromfenvinfos, bromo-DDT, bufencarb, butacarb, butathiofos, butonate, cadusafos, calcium arsenate, calcium cyanide, carbon disulfide, carbon tetrachloride, carbosulfan, cartap, cartap hydrochloride, cevadine, chlorbicyclen, chlordane, chlordecone, chlorethoxyfos, chlorfluazuron, chlormephos, chloroform, chloropicrin, chlorphoxim, chlorprazophos, chromafenozide, cis-resmethrin, cismethrin, clocythrion, cloethocarb, clothianidin, copper acetoarsenite, copper arsenate, copper oleate, coumithoate, cryolite, CS 708, cyanofenphos, cyanophos, cyclethrin, cycloprothrin, cyfluthrin, cyphenothrin, cyromazine, cythioate, d-limonene, d-tetramethrin, DAEP, dazomet, decarbofuran, deltamethrin, diamidafos, dicapthon, dichlofenthion, dicresyl, dicyclanil, dieldrin, diethyl 5-methylpyrazol-3-yl phosphate, dilor, dimefluthrin, dimetan, dimethrin, dimethylvinphos, dimetilan, dinoprop, dinosam, dinoseb, dinotefuran, diofenolan, dioxabenzofos, dioxacarb, dithicrofos, DSP, ecdysterone, EI 1642, EMPC, empenethrin, EPBP, epofenonane, esfenvalerate, etaphos, ethiofencarb, ethiprole, ethoprophos, ethyl formate, ethylene dibromide, ethylene dichloride, ethylene oxide, etofenprox, EXD, famphur, fenamiphos, fenchlorphos, fenethacarb, fenfluthrin, fenitrothion, fenobucarb, fenoxacrim, fenoxycarb, fenpirithrin, fensulfothion, fenthion-ethyl, flonicamid, flubendiamide, flucofuron, flufenerim, flufenprox, fonofos, fosmethilan, fospirate, fosthiazate, fosthietan, furathiocarb, furethrin, gamma-cyhalothrin, guazatine, guazatine acetates, sodium tetrathiocarbonate, halfenprox, halofenozide, HCH, HEOD, heptachlor, heterophos, hexaflumuron, HHDN, hydramethylnon, hydrogen cyanide, hydroprene, hyquincarb, imidacloprid, imiprothrin, indoxacarb, IPSP, isazofos, isobenzan, isodrin, isofenphos, isolane, isoprocarb, isoprothiolane, isothioate, isoxathion, juvenile hormone I, juvenile hormone II, juvenile hormone III, kelevan, kinoprene, lambda-cyhalothrin, lead arsenate, lepimectin, leptophos, lirimfos, lythidathion, m-cumenyl methylcarbamate, magnesium phosphide, mazidox, mecarphon, menazon, mercurous chloride, mesulfenfos, metaflumizone, metam, metam-potassium, metam-sodium, methanesulfonyl fluoride, methocrotophos, methoprene, methothrin, methoxychlor, methoxyfenozide, methyl isothiocyanate, methylchloroform, methylene chloride, metofluthrin, metoxadiazone, mirex, naftalofos, naphthalene, NC-170, nicotine, nicotine sulfate, nitenpyram, nithiazine, nornicotine, novaluron, noviflumuron, O-5-dichloro-4-iodophenyl O-ethyl ethylphosphonothioate, O,O-diethyl O-4-methyl-2-oxo-2H-chromen-7-yl phosphorothioate, O,O-diethyl O-6-methyl-2-propylpyrimidin-4-yl phosphorothioate, O,O,O',O'-tetrapropyl dithiopyrophosphate, oleic acid, oxydemeton-methyl, para-dichlorobenzene, parathion-methyl, pentachlorophenol, pentachlorophenyl laurate, permethrin, PH 60-38, phenkapton, phenothrin, phosnichlor, phosphine, phoxim-methyl, pirimetaphos, pirimicarb, pirimiphos-ethyl, polychlorodicyclopentadiene isomers, potassium arsenite, potassium thiocyanate, prallethrin, precocene I, precocene II, precocene III, primidophos, profluthrin, promecarb, propaphos, prothiofos, protrifenbute, pymetrozine, pyraclofos, pyrazophos, pyresmethrin, pyridalyl, pyriproxyfen, quassia, quinalphos-methyl, quinothion, rafoxanide, resmethrin, rotenone, kadethrin, ryania, ryanodine,

sabadilla), schradan, sebufos, selamectin, SI-0009, silafluofen, thiapronil, sodium arsenite, sodium cyanide, sodium fluoride, sodium hexafluorosilicate, sodium pentachlorophenoxide, sodium selenate, sodium thiocyanate, spirotetramat, sulcofuron, sulcofuron-sodium, sulfuryl fluoride, sulprofos, tar oils, tazimcarb, TDE, tebufenozide, tebupirimfos, teflubenzuron, tefluthrin, temephos, terallethrin, terbufos, 5 tetrachloroethane, tetramethrin, theta-cypermethrin, thiachloprid, thiamethoxam, thicofos, thiocyclam, thiocyclam hydrogen oxalate, thiodicarb, thionazin, thiosultap, thiosultap-sodium, tolfenpyrad, tralomethrin, transfluthrin, transpermethrin, triazamate, trichlormetaphos-3, trichloronat, triflumuron, trimethacarb, tolprocarb, triclopyricarb, triprene, veratridine, veratrine, XMC, xylylcarb, zeta-cypermethrin, zetamethrin, zinc phosphide, zolaprofos, and brofluthrin, cyantraniliprole, 10 chlorantraniliprole, cyenopyrafen, pyrifluquinazon, spinetoram, sulfoxaflor, flupiprole, meperfluthrin, tetramethylfluthrin, triflumezopyrim, bis(tributyltin) oxide, bromoacetamide, ferric phosphate, metaldehyde, niclosamide, niclosamide-olamine, tributyltin oxide, pyrimorph, trifenmorph, pyriprole, imicyafos, 1,2-dibromo-3-chloropropane, 1,3-dichloropropene, 3,4-dichlorotetrahydrothiophene 1,1-dioxide, 3-(4-chlorophenyl)-5-methylrhodanine, 5-methyl-6-thioxo-1,3,5-thiadiazinan-3-ylacetic acid, 6- 15 isopentenylaminopurine, benclotiaz, cytokinins, trinexapac, trinexapc ethyl, DCIP, furfural, isamidofos, kinetin, Myrothecium verrucaria composition, phosphocarb, tetrachlorothiophene, xlenols, zeatin, fluensulfone, potassium ethylxanthate, acibenzolar, acibenzolar-S-methyl, Reynoutria sachalinensis extract, alpha-chlorohydrin, antu, barium carbonate, bithiosemi, brodifacoum, bromadiolone, bromethalin, chlorophacinone, cholecalciferol, coumachlor, coumafuryl, coumatetralyl, crimidine, 20 difenacoum, difethialone, diphacinone, ergocalciferol, floccoumafen, fluoroacetamide, flupropadine, flupropadine hydrochloride), norbormide, phosacetim, phosphorus, pindone, pyrinuron, scilliroside, sodium fluoroacetate, thallium sulfate, warfarin, 2-(2-butoxyethoxy)ethyl piperonylate, 5-(1,3-benzodioxol-5-yl)-3-hexylcyclohex-2-enone, farnesol with nerolidol, verbutin, MGK 264, piperonyl butoxide, piprotal, propyl isomer, S421, sesamex, sesamol, sulfoxide, anthraquinone, copper 25 naphthenate, copper oxychloride, dicyclopentadiene), thiram, zinc naphthenate, ziram, imanin, ribavirin, mercuric oxide, thiophanate-methyl, azaconazole, bitertanol, bromuconazole, cyproconazole, difenoconazole, diniconazole, epoxiconazole, fenbuconazole, fluquinconazole, flusilazole, flutriafol, furametpyr, hexaconazole, imazalil, imibenconazole, ipconazole, metconazole, myclobutanil, paclobutrazole, pefurazoate, penconazole, prothioconazole, pyrifenoxy, prochloraz, propiconazole, 30 pyrisoxazole, simeconazole, tebuconazole, tetraconazole, triadimefon, triadimenol, triflumizole, triticonazole, ancymidol, fenarimol, nuarimol, bupirimate, dimethirimol, ethirimol, dodemorph, fenpropidine, fenpropimorph, spiroxamine, tridemorph, cyprodinil, mepanipyrim, pyrimethanil, fenpiclonil, fludioxonil, benalaxyl, furalaxyl, metalaxyl, R-metalaxyl, ofurace, oxadixyl, carbendazim, debacarb, fuberidazole, thiabendazole, chlozolinate, dichlozoline, iprodione, myclozoline, procymidone, 35 vinclozoline, boscalid, carboxin, fenfuram, flutolanil, mepronil, oxycarboxin, penthiopyrad, thifluzamide, dodine, iminoctadine, azoxystrobin, dimoxystrobin, enestroburin, fenaminostrobin, flufenoxystrobin, fluoxastrobin, kresoxim-methyl, metominostrobin, trifloxystrobin, orysastrobin, picoxystrobin, pyraclostrobin, pyrametostrobin, pyraoxystrobin, ferbam, mancozeb, maneb, metiram, propineb, zineb, captafol, captan, fluoroimide, folpet, tolylfluanid, bordeaux mixture, copper oxide, mancozeb, oxine- 40 copper, nitrothal-isopropyl, edifenphos, iprobenphos, phosdiphen, tolclofos-methyl, anilazine,

benthiavalicarb, blasticidin-S, chloroneb, chlorothalonil, cyflufenamid, cymoxanil, diclocymet, diclomezine, dicloran, diethofencarb, dimethomorph, flumorph, dithianon, ethaboxam, etridiazole, famoxadone, fenamidone, fenoxanil, ferimzone, fluazinam, fluopicolide, flusulfamide, fluxapyroxad, fenhexamid, fosetyl-aluminium, hymexazol, iprovalicarb, cyazofamid, methasulfocarb, metrafenone, pencycuron, phthalide, polyoxins, propamocarb, pyribencarb, proquinazid, pyroquilon, pyriofenone, quinoxifen, quintozone, tiadinil, triazoxide, tricyclazole, triforine, validamycin, valifenalate, zoxamide, mandipropamid, isopyrazam, sedaxane, benzovindiflupyr, pydiflumetofen, 3-difluoromethyl-1-methyl-1H-pyrazole-4-carboxylic acid (3',4',5'-trifluoro-biphenyl-2-yl)-amide, afidopyropen, pyflubumide, isoflucypram, isotianil, dipymetitrone, 6-ethyl-5,7-dioxo-pyrrolo[4,5][1,4]dithiino[1,2-c]isothiazole-3-carbonitrile, 2-(difluoromethyl)-N-[3-ethyl-1,1-dimethyl-indan-4-yl]pyridine-3-carboxamide, 4-(2,6-difluorophenyl)-6-methyl-5-phenyl-pyridazine-3-carbonitrile, (R)-3-(difluoromethyl)-1-methyl-N-[1,1,3-trimethylindan-4-yl]pyrazole-4-carboxamide, 4-(2-bromo-4-fluoro-phenyl)-N-(2-chloro-6-fluoro-phenyl)-2,5-dimethyl-pyrazol-3-amine, 4-(2-Bromo-4-fluorophenyl)-N-(2-chloro-6-fluorophenyl)-1,3-dimethyl-1H-pyrazol-5-amine, fluindapyr, jiaxiangjunzhi, lvbenmixianan, dichlobentiazox, mandestrobin, 3-(4,4-difluoro-3,4-dihydro-3,3-dimethylisoquinolin-1-yl)quinolone, 2-[2-fluoro-6-[(8-fluoro-2-methyl-3-quinolyl)oxy]phenyl]propan-2-ol, oxathiapiprolin, tert-butyl N-[6-[[[(1-methyltetrazol-5-yl)-phenyl-methylene]amino]oxymethyl]-2-pyridyl]carbamate, pyraziflumid, inpyrfluxam, trolprocarb, mefentrifluconazole, ipfentrifluconazole, 2-(difluoromethyl)-N-[(3R)-3-ethyl-1,1-dimethyl-indan-4-yl]pyridine-3-carboxamide, N'-(2,5-dimethyl-4-phenoxy-phenyl)-N-ethyl-N-methyl-formamidine, N'-[4-(4,5-dichlorothiazol-2-yl)oxy-2,5-dimethyl-phenyl]-N-ethyl-N-methyl-formamidine, [2-[3-[2-[1-[2-[3,5-bis(difluoromethyl)pyrazol-1-yl]acetyl]-4-piperidyl]thiazol-4-yl]-4,5-dihydroisoxazol-5-yl]-3-chloro-phenyl] methanesulfonate, but-3-ynyl N-[6-[[[(Z)-[(1-methyltetrazol-5-yl)-phenyl-methylene]amino]oxymethyl]-2-pyridyl]carbamate, methyl N-[5-[4-(2,4-dimethylphenyl)triazol-2-yl]-2-methyl-phenyl]methyl]carbamate, 3-chloro-6-methyl-5-phenyl-4-(2,4,6-trifluorophenyl)pyridazine, pyridachlometyl, 3-(difluoromethyl)-1-methyl-N-[1,1,3-trimethylindan-4-yl]pyrazole-4-carboxamide, 1-[2-[[1-(4-chlorophenyl)pyrazol-3-yl]oxymethyl]-3-methyl-phenyl]-4-methyl-tetrazol-5-one, 1-methyl-4-[3-methyl-2-[[2-methyl-4-(3,4,5-trimethylpyrazol-1-yl)phenoxy]methyl]phenyl]tetrazol-5-one, aminopyrifin, ametocradin, amisulbrom, penflufen, (Z,2E)-5-[1-(4-chlorophenyl)pyrazol-3-yl]oxy-2-methoxyimino-N,3-dimethyl-pent-3-enamide, florylpicoxamid, and fencipicoxamid, tebufloquin, ipflufenquin, quinfumelin, isofetamid, N-[2-[2,4-dichloro-phenoxy]phenyl]-3-(difluoromethyl)-1-methyl-pyrazole-4-carboxamide, N-[2-[2-chloro-4-(trifluoromethyl)phenoxy]phenyl]-3-(difluoromethyl)-1-methyl-pyrazole-4-carboxamide, benzothiofostrobin, phenamacril, 5-amino-1,3,4-thiadiazole-2-thiol zinc salt (2:1), fluopyram, flutianil, fluopimomide, pyrapropoyne, picarbutrazox, 2-(difluoromethyl)-N-(3-ethyl-1,1-dimethyl-indan-4-yl)pyridine-3-carboxamide, 2-(difluoromethyl)-N-((3R)-1,1,3-trimethylindan-4-yl)pyridine-3-carboxamide, 4-[[6-[2-(2,4-difluorophenyl)-1,1-difluoro-2-hydroxy-3-(1,2,4-triazol-1-yl)propyl]-3-pyridyl]oxy]benzonitrile, metyltetraprole, 2-(Difluoromethyl)-N-((3R)-1,1,3-trimethylindan-4-yl)pyridine-3-carboxamide, α -(1,1-dimethylethyl)- α -[4'-(trifluoromethoxy)[1,1'-biphenyl]-4-yl]-5-pyrimidinemethanol, Fluoxapiprolin, Enoxastrobin, 4-[[6-[2-(2,4-difluorophenyl)-1,1-difluoro-2-hydroxy-3-(1,2,4-triazol-1-yl)propyl]-3-pyridyl]oxy] benzonitrile, 4-[[6-[2-(2,4-difluorophenyl)-1,1-difluoro-2-hydroxy-3-(5-sulfanyl-1,2,4-triazol-1-yl)propyl]-3-pyridyl]oxy] benzonitrile, 4-[[6-[2-(2,4-difluorophenyl)-

1,1-difluoro-2-hydroxy-3-(5-thioxo-4H-1,2,4-triazol-1-yl)propyl]-3-pyridyl]oxy]benzonitrile, Fluoxapiprolin, Enoxastrobin, 4-[[6-[2-(2,4-difluorophenyl)-1,1-difluoro-2-hydroxy-3-(1,2,4-triazol-1-yl)propyl]-3-pyridyl]oxy] benzonitrile, 4-[[6-[2-(2,4-difluorophenyl)-1,1-difluoro-2-hydroxy-3-(5-sulfanyl-1,2,4-triazol-1-yl)propyl]-3-pyridyl]oxy] benzonitrile, and 4-[[6-[2-(2,4-difluorophenyl)-1,1-difluoro-2-hydroxy-3-(5-thioxo-4H-1,2,4-triazol-1-yl)propyl]-3-pyridyl]oxy]benzonitrile.

12. A composition according to any preceding claim, wherein component (B) is selected from the group consisting of benzovindiflupyr, fluxapyroxad, pydiflumetofen, isopyrazam, fluopyram, pen thiopyrad, sedaxane, bixafen, difenoconazole, cyproconazole, tebuconazole, hexaconazole, prothioconazole, propiconazole, epoxiconazole, flutriafol, mefentrifluconazole, ipconazole, paclobutrazol, azoxystrobin, trifloxystrobin, picoxystrobin, pyraclostrobin, metalaxyl-M, fenpropidin, fenpropimorph, cyprodinil, spiroxamine, mancozeb, chlorothalonil, oxathiapiprolin, mandipropamid, fluazinam, fludioxinil, fosetyl-aluminium, acibenzolar-S-methyl, trinexapac ethyl, procymidone, carbendazim, fenhexamid, prochloraz, prohexadione-calcium, Timorex Gold™ (plant extract comprising tea tree oil), N'-[5-bromo-2-methyl-6-(1-methyl-2-propoxy-ethoxy)-3-pyridyl]-N-ethyl-N-methyl-formamidine, N'-[5-bromo-2-methyl-6-[(1S)-1-methyl-2-propoxy-ethoxy]-3-pyridyl]-N-ethyl-N-methyl-formamidine, N'-[5-bromo-2-methyl-6-[(1R)-1-methyl-2-propoxy-ethoxy]-3-pyridyl]-N-ethyl-N-methyl-formamidine, N'-[5-bromo-2-methyl-6-(1-methyl-2-propoxy-ethoxy)-3-pyridyl]-N-isopropyl-N-methyl-formamidine, N'-[5-chloro-2-methyl-6-(1-methyl-2-propoxy-ethoxy)-3-pyridyl]-N-ethyl-N-methyl-formamidine, calcium phosphonate, cis-jasmone, trinexapac-ethyl, glyphosate, 2,4-D (2,4-dichlorophenoxyacetic acid) and thiamethoxam.

13. A composition according to any preceding claim, wherein, the weight ratio of component (A) to component (B) is selected from the following: from 100:1 to 1:100, from 50:1 to 1:50, from 20:1 to 1:40, from 15:1 to 1:30, from 12:1 to 1:25, from 10:1 to 1:20, from 5:1 and 1:15, from 3:1 to 1:10 or from 2:1 to 1:5.

14. A composition according to any preceding claim, comprising an agriculturally acceptable formulation adjuvant.

15. A method for improving the tolerance of a plant to abiotic stress, regulating or improving the growth of a plant, inhibiting seed germination, or improving the yield of a plant, wherein the method comprises applying to the plant, plant part, plant propagation material, or plant growing locus a composition according to any preceding claim.

16. A method of controlling plant pests, in particular insects and fungi, comprising applying to a plant, plant part, plant propagation material, or plant growing locus a composition according to any one of claims 1-14.

17. A method according to either of claims 15 or 16, wherein the plant is a soybean plant, wheat or a corn plant.

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2019/085721

A. CLASSIFICATION OF SUBJECT MATTER INV. A01N43/42 A01N43/86 C07D215/227 C07D265/18 C07D401/04 A01P1/00 A01P3/00 A01P7/02 A01P7/04 A01P21/00 ADD.		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) A01N C07D		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) EPO-Internal, WPI Data, CHEM ABS Data		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2018/007217 A1 (SYNGENTA PARTICIPATIONS AG [CH]) 11 January 2018 (2018-01-11) cited in the application	1-5, 7-10, 12-17
Y	the claims; the examples and exemplified compounds; page 16; page 17; page 21, lines 15-33; page 22, lines 4-36; page 23, lines 5-32 -----	1-17
X	WO 2016/128317 A1 (SYNGENTA PARTICIPATIONS AG [CH]) 18 August 2016 (2016-08-18) cited in the application	1-10, 12-17
Y	the claims; the examples and the exemplified compounds; page 12, lines 10-29; page 13, lines 3-27; page 14, lines 6-36; page 18, lines 20-38; page 19, lines 7-40; page 20, lines 14-36 ----- -/-	1-17
☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.		
* Special categories of cited documents : "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search 17 February 2020		Date of mailing of the international search report 04/03/2020
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016		Authorized officer Lorenzo Varela, M

INTERNATIONAL SEARCH REPORT

International application No
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
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A	US 2005/137228 A1 (DU DANIEL Y [US] ET AL) 23 June 2005 (2005-06-23) the claims and the examples -----	1-17
A	WO 2018/017490 A1 (UNIV CALIFORNIA [US]; SYNGENTA PARTICIPATIONS AG [CH]) 25 January 2018 (2018-01-25) the claims -----	1-17
A	WO 2013/148339 A1 (UNIV CALIFORNIA [US]) 3 October 2013 (2013-10-03) the claims -----	1-17

INTERNATIONAL SEARCH REPORT

Information on patent family members

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Information on patent family members

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